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News of the Industry Begins Page 908

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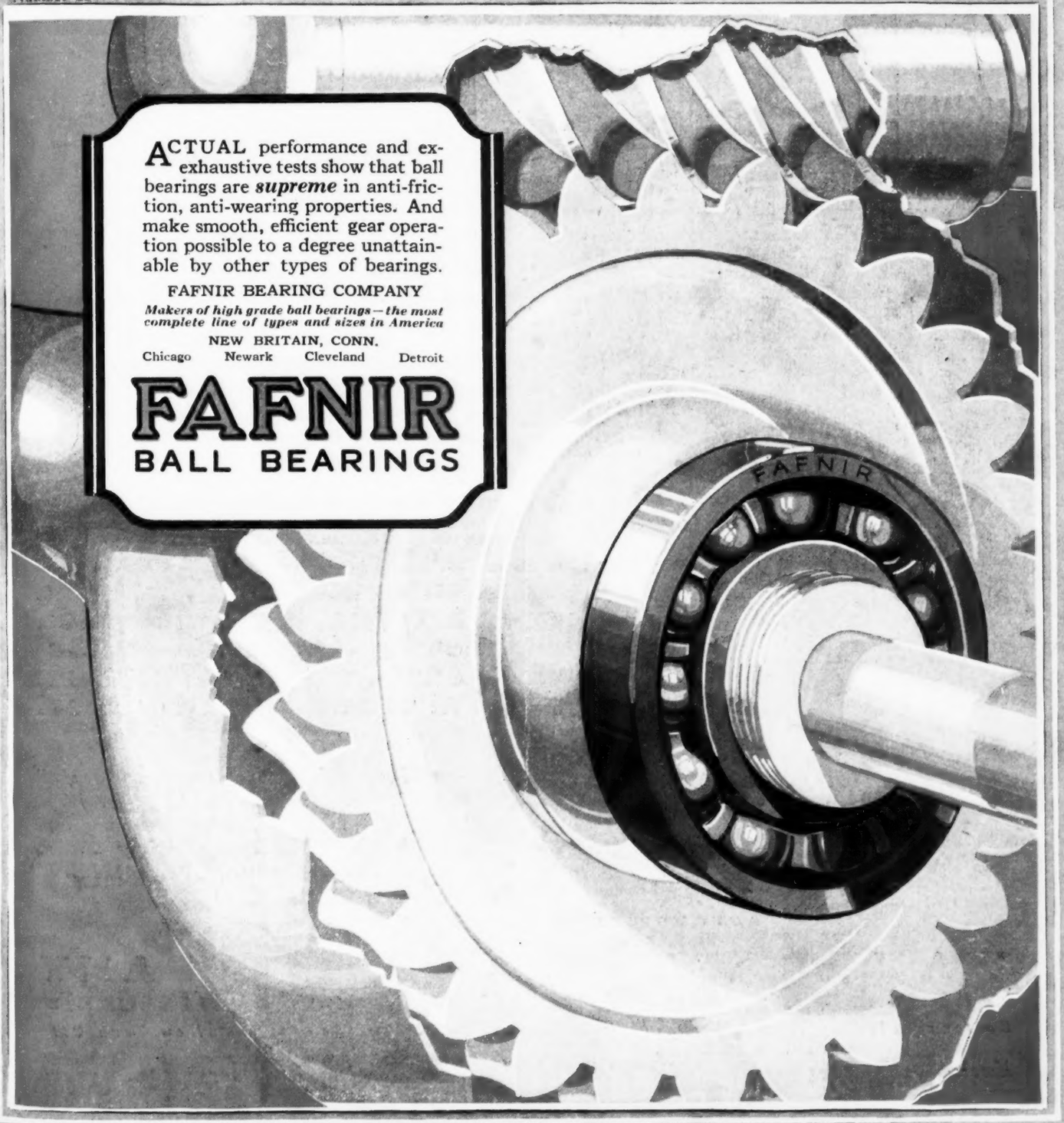

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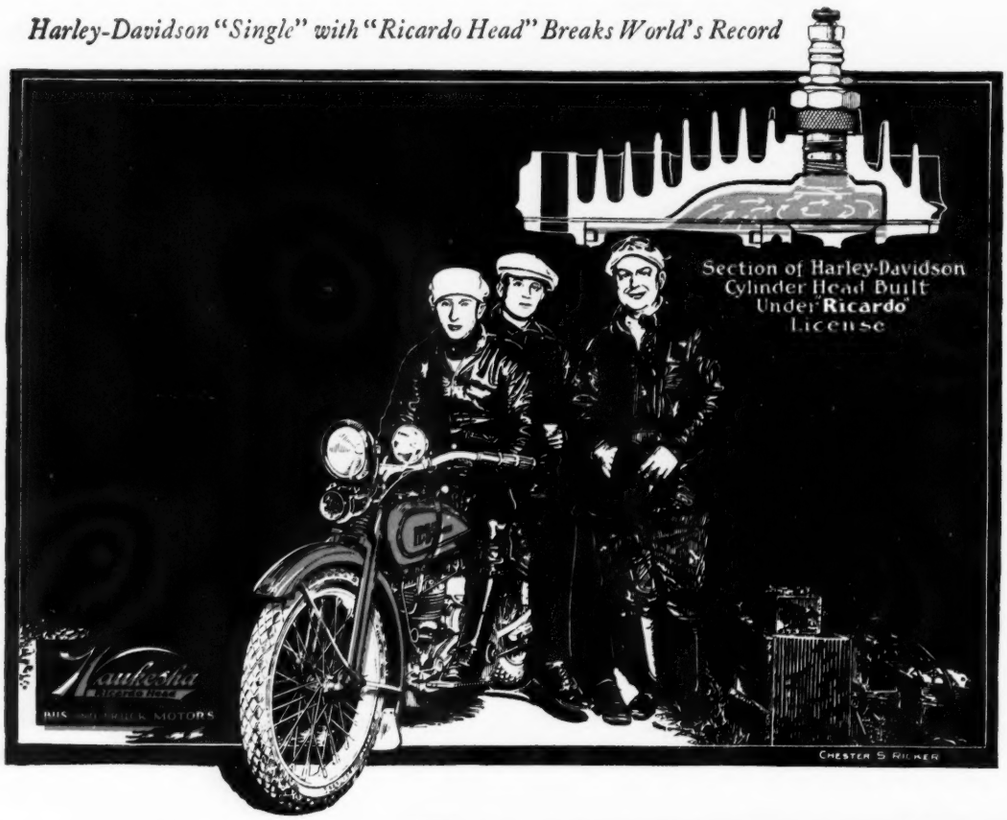
Harley-Davidson "Single" with "Ricardo Head" Breaks World's Record



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AUTOMOTIVE INDUSTRIES

VOLUME 55 *Philadelphia, Thursday, November 25, 1926* NUMBER 22

Finance Companies Protest Factory Time-Sales Plans

Resolution passed at Chicago meeting puts N. A. F. C. on record as favoring free hand for dealers. Increase is shown in repossessions.

By John C. Gourlie

THE embattled finance companies mobilized at Chicago last week for the third annual convention of the National Association of Finance Companies, most of them armed to the teeth for a final drive against the factory time-sales plans that have eased the path of a few companies and made the going difficult for the many.

The urgency of this point of disturbance drew to the meeting about 450 members and guests, double the number of a year ago, and resulted in scant or perfunctory consideration for other matters probably of greater intrinsic importance to the automobile industry. It precluded discussion, for instance, of a gain in repossessions this year over last shown by the association's survey to range from 5.1 per cent to 41 per cent, according to the kind of paper and whether new or used cars were financed.

When about three of every hundred new cars sold on time and five or six of every hundred used cars sold on time are being repossessed, as shown by the experience of 150 representative finance companies, the situation would seem to call for at least casual investigation by the interests concerned. Perhaps nothing could be done about it, but some valuable marketing information would be collected for the guidance of instalment selling.

There is no blinking the fact, however, that the agitation over factory finance plans added an element of the spectacular to the Chicago gathering. Rumors were flying around the first day that a resolution would be introduced flatly condemning the payment of subsidies to finance companies, and that then and there four or five of the biggest members of the association would announce their resignations. Monday afternoon 20 resolutions, not bearing directly on the factory plans, were rushed through almost without discussion. Then came a motion to adjourn and it was voted down in a roar of "noes."

But the leaders were not quite ready to show their hand. It was late Tuesday morning that again the convention broke all precedents by voting down a motion to adjourn and someone called for the report of the factory relations committee. Emlen S. Hare, chairman of the committee and vice-president of Hare & Chase, Inc., arose in a tense silence and spoke in measured terms of the policies of the committee. He then offered the following resolution:

"Resolved, that the dealer be permitted freedom of choice to select the method of financing and that finance company which will best serve him in his locality."

This was passed without discussion. Some of the members had hoped for a stronger resolution, condemning the payment of subsidies to finance companies, but the statement of principles was enough to join clearly the issue between the independents and the factory companies. The factory relations committee was continued for another year. The following was given by Mr. Hare as the platform of the committee:

ONLY 13.24 per cent of new and used cars financed in 1926 called for more than 12 monthly payments, against 18.36 per cent in 1925, according to a survey presented at the N. A. F. C. convention.

Many companies that thought they were making money in the scramble for business last year found out this year that they were really losing. Those that went to excesses in the granting of terms have passed into oblivion and the ones remaining realize they might better liquidate than let down the bars again.

A resolution reaffirming the stand of the association in regard to standard terms was passed without opposition at the meeting.

1. Financing rates should be high enough to cover the entire cost of financing plus a fair profit.
2. Dealers should have a free hand in financing.
3. Advertising of rates and terms should be eliminated.

Subsidies to finance companies, said Mr. Hare, had been started through competition and continued through fear, although the automobile companies that were paying no subsidies showed increases in sales that compared favorably with the gains made by others having lower time-sales rates through payments to finance companies. Subsidies, he held, were uneconomic, were added to manufacturing costs and passed along to the consumer, and constituted unfair competition. They reacted unfavorably on 98 per cent of finance companies and helped no one in the industry.

Oppose Advertising of Terms

A resolution was passed directed against advertisement of financing rates and terms, but this practice apparently has been abandoned. It was the source, said Mr. Hare, of much unfavorable criticism of finance companies.

From statements made on the floor and in conversations with members of the association the burden of difficulties under which most of the companies were operating was made clear. Some of the troubles are:

1. Increasing difficulty in borrowing from banks.
2. Competition of finance rates offered by factory companies that the independents say they cannot meet.
3. Trouble in obtaining insurance.
4. The pressure being brought by some manufacturers on dealers to use the factory finance plan.

Where obstacles to borrowing were present, it appeared to be mainly because the banks favored national finance companies, with their greater spread of risks, although members of the local companies said they could show better statements than some of the national companies.

The insurance obstacle was apparently the only one not laid at the door of the factory plans. It was said that in some parts of the country insurance concerns would not write theft policies because of the high loss ratios insufficiently covered by the current premium rates. This was especially felt where factories in the last year had added items of original equipment that were subject to theft and were covered by the policies issued with the financing. Spare tire thefts were particularly felt.

The insurance situation led to the passing of a resolution directed to car manufacturers, asking them to give earnest study to automatic locking devices and other means of curtailing theft of the whole car and its accessories and equipment. It was declared that coincidental locks were a big help in obtaining insurance at reasonable rates, but C. C. Hanch, general manager, told members of some of the difficulties encountered by manufacturers in the consideration of coincidental locks and on his advice there was no specific recommendation made on this point in the resolution.

However the fight between the independents and the companies with factory contracts is waged, it is becoming fairly evident that the "outside" concerns will not attempt to hold or win back business by stretching their terms. A year ago this seemed an almost certain development, but experience since then has so plainly demonstrated the economic folly of long terms that no responsible company is willing to consider them seriously as a steady policy.

Mr. Hanch's survey showed that only 13.24 per cent of new and used cars financed in 1926 called for more than 12 monthly payments, against 18.36 per cent in 1925. Many companies that thought they were making money in the scramble for business last year found out this year that they were really losing. Those that went to excesses in the granting of terms have passed into oblivion and the ones remaining realize they might better liquidate than let down the bars again.

A resolution reaffirming the stand of the association in favor of standard terms—a third down and the balance in 12 monthly instalments on new cars and 40 per cent and 12 months for used cars—was passed without opposition, whereas a year ago it was tabled. Terms, it was plain, no longer are a source of agitation.

On the other hand, the disturbing fact developed by the survey is the marked increase in repossessions this year when standard terms were followed. The accompanying table really tells its own story, but it is worthy of note that although all classes of paper participated in the increases, the ratio of gain was greater in the transactions handled on standard terms. Apparently the non-standard transactions had been scrutinized more carefully.

The percentage of repossessions of new cars sold on standard terms was 1.72 per cent of the total so handled in 1925, against 2.09 per cent in 1926, a gain of 18 per cent. On used cars sold on standard terms the gain was from 3.01 per cent to 4.27 per cent, an increase of 41 per cent. The average loss per repossessed car sold on standard terms was $50 in 1925 and $65 in 1926.

Although there was no official explanation for the gain in repossessions, there are not many possible causes, and most of these can be removed. With prosperity general up to Nov. 1, the period covered by the survey, it does not seem that failure to pay was due to unemployment or other economic disturbances. It seems plain that the finance companies either knowingly or unwittingly took more bad risks. The fact that non-standard paper was curtailed this year tends to back up the assertion of all those interviewed that every effort was made to avoid losses.

It is, therefore, easy to believe the statement made frequently that dealers have been reaching out to a lower stratum of buyers, of doubtful credit standing, yet who sometimes were able to pass the credit investigation of the dealer or the finance company. If this is a fact, it certainly deserves the most thorough consideration of all interested.

Repossessions Loom as Menace

Repossessions may yet become a menace, if they are not already. It is easier to check a tendency at its inception than later on, when a reversal cannot be accomplished without a disruption of manufacture or distribution.

In this connection Harry A. Wheeler, president of the Union Trust Co., Chicago, told the members that they ought to judge credit transactions not merely on the basis of the collateral and how well it was margined, but to follow banking practices to the extent of making sure that the purchaser would be able to pay the note even if the collateral were wiped out.

Mr. Wheeler said that finance companies had an enormous responsibility, as industry, with the help of time-sales, was geared up to high production at low per unit profits, and any breakdown of the machinery of time-selling would inevitably have a serious reaction on trade and industry in general. He therefore urged the utmost caution in credit extension.

Automobile Time-Sales Statistics, 1925-1926

Average of Composite Experience of About 150 Representative Finance Companies, Based Upon Individual Averages for One Year, as of Nov. 1

	1925	1926
New and Used Cars		
1. Average loss per repossessed car which had 12 or less equal monthly payments	$50	$65
2. Average loss per repossessed car which had 13 to 18 equal monthly payments	$78	$94
2A. Increase of hazard over standard terms	57%	44%
3. Average loss per repossessed car which had a balloon note, or more than 18 monthly payments	$220	$158
3A. Increase of hazard over standard terms	341%	143%
New Cars		
4. Percentage of repossessions where down payment was 33 1/3 per cent of cash price or 30 per cent of time-selling price	1.72%	2.09%
5. Percentage of repossessions where down payment was 25 per cent of time-selling price	3.81%	4.02%
5A. Increase of hazard over standard terms	122%	92%
6. Percentage of repossessions where down payment was less than 25 per cent of the time-selling price	10.96%	11.52%
6A. Increase of hazard over standard terms	537%	451%
Used Cars		
7. Percentage of repossessions where down payment was 40 per cent of the cash price or 37 per cent of time-selling price	3.01%	4.27%
8. Percentage of repossessions where down payment was less than 37 per cent of time-selling price	6.16%	8.57%
8A. Increase of hazard over standard terms	105%	101%
9. Used car paper percentage of total automobile retail paper handled	31%	33%
10. Percentage of companies requiring dealers' indorsement of all used car paper	50%	46%
10A. Percentage of companies requiring dealers' indorsement of part used car paper	44%	40%
New and Used Cars		
11. Percentage of automobile retail paper calling for 13 or more monthly payments	18.32%	13.24%
12. Percentage of automobile retail paper with down payment 35 per cent or less on used cars and 25 per cent or less on new cars	19.36%	9%
13. Average amount of purchase money note (total of instalments per car) (New)	$550	$595
(Used)	280	277
14. Percentage of companies handling commercial vehicle paper		64%
15. Percentage of all cars sold on the instalment plan	75.5%	
16. Percentage of used cars traded in on new and used cars, to total new cars sold	99%	90%
17. Percentage of new cars sold on the instalment plan		64%

Some of the resolutions of general interest passed at the convention were:

All advertising should be discontinued that mentions specific terms and rates of financing.

Heads of finance company departments having to do with the disposal of repossessed cars should submit articles describing successful methods for distribution to other finance companies and to dealers.

A committee should prepare a standard form for the interchange of credit information among finance companies.

Rebates by finance companies to automobile dealers are condemned as unfair competition.

Authorization was given to form a commercial financing division, to give attention to truck and bus problems along the lines of the association's activities in connection with passenger car financing. It was brought out that the majority of the members handled commercial vehicles as well as motor cars.

Alfred Reeves, general manager of the National Automobile Chamber of Commerce, told the members that reports of the slackening of motor car business had been exaggerated, as usual. He saw the outlook as still bright. Financing had been a big boon to the automobile industry and he hoped the companies would continue to operate with intelligent conservatism. Opposition to financing mainly came from industries unable to profit by it.

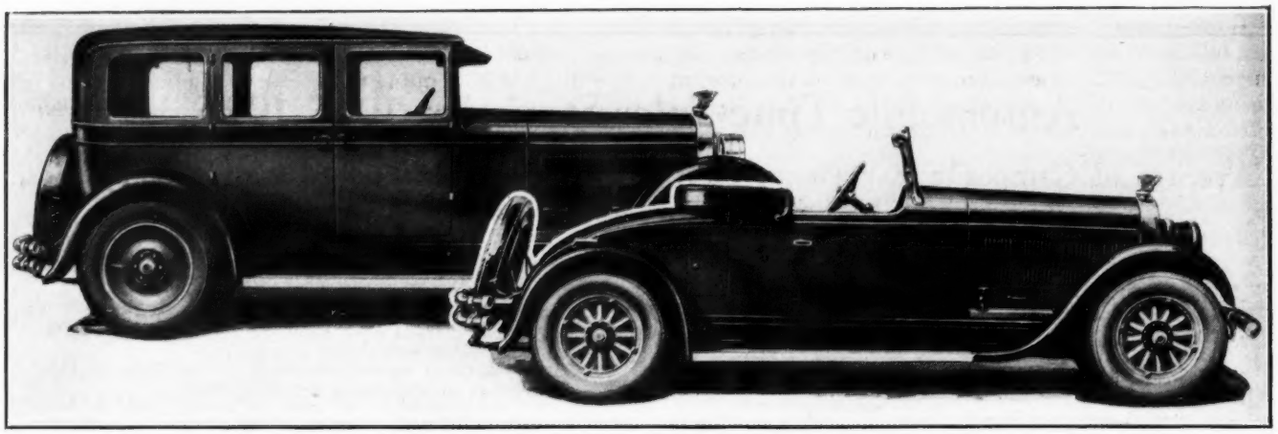
C. A. Vane, general manager of the National Automobile Dealers Association, urged the financing companies to pay more attention to the problems of the small-town dealers. Local conferences, he declared, in which dealers and finance companies might participate would go far toward eliminating costly misunderstandings and the pressure of unsound practices.

Small-town dealers, Mr. Vane continued, had often been misjudged as to their credit positions. The character of the dealer even more than his net worth ought to be considered, said Mr. Vane, and all departments of his business and not only the new car sales.

An exhaustive study by Milan V. Ayres, Chicago economist, of the whole field of instalment selling tended to show that time-sales from 1923 to 1925 increased only 8 per cent and that the automobile industry had no part in this increase, since in 1923 time-sales were well established in the industry and any gain since in the number of transactions was counterbalanced by the lower prices of cars. He estimated the average outstanding debt as a result of car and truck financing at $1,378,000,000, and as a result of all instalment buying at $2,638,000,000, or less than 4 per cent of the annual income of the country.

Mr. Ayres declared that the former practice of manufacturers in most lines of extending 60 to 90 days' credit was being abandoned as a result of the way out pointed by the automobile companies, and retailers were also curtailing charge accounts. Thus the growth in time-selling is mainly due to the shift of credit from the charge account to the chattel mortgage note, or its equivalent.

New officers named by the directors of the N. A. F. C. were: President, E. M. Morris, Associated Investment Co., South Bend, who succeeded A. E. Brooker, Securities Investment Co., St. Louis, and fourth vice-president, J. J. Schumann, Jr., General Motors Acceptance Corp. Officers re-elected were: First vice-president, John L. Little, National Bond & Investment Co., Chicago; second vice-president, F. R. V. Williams, Finance & Guaranty Co., Baltimore; third vice-president, L. F. Weaver, L. F. Weaver Co., San Francisco; treasurer, W. G. Tennant, Tennant Finance Corp., Chicago, and secretary and general manager, C. C. Hanch, Chicago.



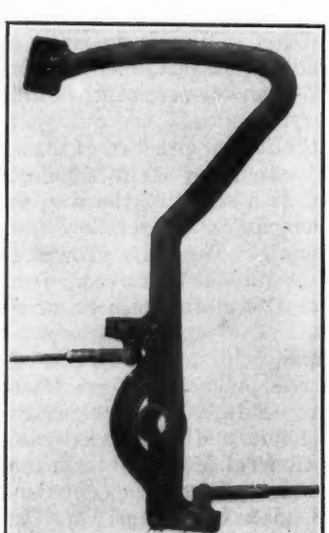
The new Gardner Model 90 sedan and the Model 80 "light-eight" roadster. The latter lists at $1395

Gardner Brings Out "Light-Eight" at Six-Cylinder Prices

New Model 80 Roadster lists at $1395 and sedan at $1695. Powered with Lycoming-built motor with vibration damper. Fedco numbering system used. Larger model is redesigned.

IN the new Model 80, Gardner Motor Co. is introducing an eight-cylinder car to sell at six-cylinder prices. It is powered with an eight-in-line Gardner-Lycoming 2¾ by 4¾ in. engine which develops 65 hp. A roadster is priced at $1395 and a sedan at $1695.

Features of the car are four-wheel mechanically operated brakes with single hex nut outside adjustment, 30 by 5.25 balloon tires, vibration damper, clear vision ventilating windshield, double filament depressible beam headlamps, ignition lock with switch integral with coil and Fedco numbering system with use and occupancy insurance which pays the owner $5 per day for 30 days in case the car is stolen. The wheelbase is 122 in. and the tread is standard.



Details of equalizer operating between front and rear brakes of the new Gardner models

Coincident with the announcement of the Model 80, the company has made a number of improvements on its 8-B model and redesignated it the Model 90. The Gardner line, consequently, now includes two eights.

Model 90 has a chassis of 130 in. wheelbase and is powered with a Gardner-Lycoming 3¼ by 4½ in. engine developing 75 hp. It is made in a victoria, sedan or brougham at $2295 and a roadster model at $1995. Features of the Model 80 are also seen in the Model 90. The tires, however, are 32 by 6.00 in. Other standard features of the Model 90 include automatic Alemite lubrication, Air Maze air cleaner, gasoline strainer, Purolator and thermostatic heat control with a heat indicator mounted on the instrument panel.

The Air Maze is a screen type cleaner which is said to have no detrimental effect on the engine power at any speed. It is readily cleaned by removing and dipping in gasoline.

The Central Lubrication System

The Alemite central lubrication system supplies oil to the spring shackle bolts and does so in proportion to the oil requirement. This is accomplished by a mechanism in the oil tank which is actuated by the up and down motion of the car. Accordingly, more oil is fed on rough roads than on smooth ones, so that the shackle bolts are lubricated in proportion to the frictional action on them. Another feature of this system as installed on these two Gardner cars is the fact that no flexible oil lines are employed, the oil for the lower shackle bolts being carried through oil ducts in the shackles themselves. Other parts of the chassis are lubricated with an Alemite oil gun.

The axles are Columbia. An interesting feature of the brake layout is the method of equalization. The front and rear brakes are equalized at the brake pedal and there is also equalization provided between the two front brakes and between the two rear brakes. A novel construction at the brake pedal limits the equalization at that point so that if either the front or rear brakes should become inoperative for any reason, the other set would still function.

The emergency brake is on the transmission, a con-

ventional emergency brake lever being located alongside of the gearshift lever in the center of the car. On the Model 90 a special construction at the base of the gearshift and emergency brake levers insures against the entrance of air from under the car.

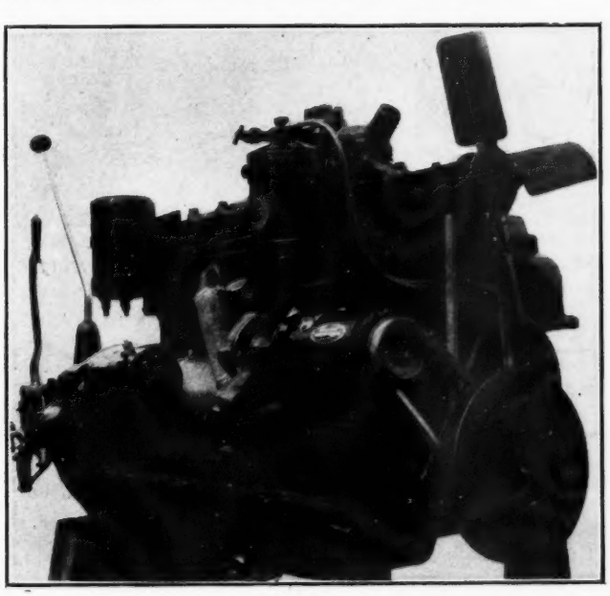
The engines of these two eights have removable cylinder heads and lightweight gray iron pistons. Four ⅛-in. piston rings are used, two being of the oil regulating type. Piston pin diameter is ⅞ in. with bearings in the connecting rod on Model 90. On Model 80 the pin is clamped in the rod and has its bearings in bushings in the piston. Oil pressure is regulated and on the Model 90 a connection with the throttle gives increased oil pressure at increased throttle opening.

Chain Drive for Camshaft

Chain drive is used for the camshaft, the generator and water pump also being chain driven on Model 90 while on Model 80 a V-belt drives pump and generator, there being another V-belt which drives the fan. The fan carries oil inside its pulley and this oil is picked up by a tube and driven by centrifugal force through this tube to the bearing surface. Swan manifolds are used together with Schebler Model SX196 carburetor in Model 90 and SX222 on Model 80.

Frames are of 7 in. channel with double-drop side rails, giving a very low-hung construction. Five tubular cross members are used to give exceptional rigidity and bumper supports are formed in the front and rear spring horns. Springs are semi-elliptic, the front being 38 in. long and the rear 57 in. Radiators are nickel-plated.

The steering gear is Ross cam and lever type with 18-in. all-wood wheel. The lighting control lever as well as gas and spark levers are on the steering wheel. Electrical equipment is Remy-Delco. Clutch is a 10-in. Borg & Beck on Model 90 and 9-in. on Model 80. Transmission is made by Warner Gear Co. Fenders are of the full crown type especially made to conform to the lines of the cars. Wheels supplied as regular equipment are Disteel on the Model 90 and wood on the Model 80, although Budd steel wheels as optional equipment may be had at extra cost.



Right side of Gardner eight-cylinder Model 80 engine, showing vibration damper, self-lubricating fan, starter, generator and pump. Purolator and tank of the Alemite central lubrication system, as included in de luxe equipment, are also shown

In the bodies interior upholstery and trim work have been chosen to harmonize with the external finish. The interior is genuine mohair in French plaits, hardware is silver finish and paneling is old English walnut. Other features of the interior are dome lights, distant control door locks, toggle grips, silk window shades and arm rests.

Equipment on the Model 90 includes snubbers front and rear, five Disteel wheels, automatic windshield wiper, stoplight, rear vision two-part mirror, one part for night and the other for day driving, bumpers front and rear, tire cover and trunk on brougham and victoria.

On the Model 80 the equipment regularly supplied includes dash type electrically operated gasoline gage, rear vision two-part mirror, stoplight, automatic windshield wiper and heat indicator on dash. Additional de luxe equipment on Model 80 includes tire cover, snubbers front and rear, bumpers front and rear, Alemite automatic chassis lubrication system, Air Maze air cleaner, gasoline strainer, Purolator, thermostatic heat control in cooling system and the use of 30 by 6.00 tires. One hundred dollars is added to the price of the car when this Model 80 de luxe equipment is included.

Michelin Designs New Type Rim

DEVELOPMENT of a straight side tire mounted on a new rim which is designed to have the advantages of the drop-center and locking-ring type of rims without their disadvantages has been announced at the Michelin factory in France.

The new rim has a drop center at the point where the valve is received, the amount of drop decreasing away from the valve hole until at the opposite side of the rim the base is quite flat. The tube is standard with the exception of a rubber pad around the valve stem which is drawn down into the hollow of the rim by means of a winged nut on the stem, thus filling the hollow and making it impossible to demount the tire whether inflated or not.

To mount the tire the tube is partially inflated and after the casing has been dropped into the hollow at the valve stem it is easily lifted over the opposite edge. To dismount, the tube must be entirely deflated in order to move it out of the hollow of the rim. No tools are required ordinarily for the job.

In tests it has been found impossible to pull the tire off the rim even when deflated so long as the nut on the valve stem is holding the tube in the drop center. The new rim is lighter than a clincher type and much lighter than a straight side with locking ring. By its construction the rim is heavier at the side opposite the valve to put the entire assembly in balance.

So far two sizes have been made—12 by 45 cm., and 13 by 45 cm. These sizes will replace the present 715 by 115 mm. and 730 by 130 mm. tires now fitted on several six and 10 hp. French cars. Larger sizes are to be developed next year. The new rim will be placed in production in Michelin's American factory.

Japanese Aviation Program

THE Japanese Ministry of Communications plans to request 11,200,000 yen in the forthcoming budget for the development of new air routes and the subsidizing of air transportation companies. The proposed new air lines are from Tokyo to Dairen; from Osaka to Shanghai and from Tokyo to Sapporo. The first two routes are to be established by April, 1932.

New Indiana Truck Equipped With Duralumin Connecting Rods

Hercules engine also has oil purifier and high compression head. Number of radiator tubes increased. Three frame lengths.

THE Indiana Truck Corp., Marion, Ind., has announced a new Model 126 3-ton chassis which supersedes Model 26, and has a number of similar features. It is powered with a Hercules 4½ by 5¾ in. engine equipped with oil purifier, high compression head and drop forged duralumin connecting rods.

The number of radiator tubes has been increased from 207 to 340 and they have been staggered in order to give greater air contact. A 20-in. fan is driven by a leather belt.

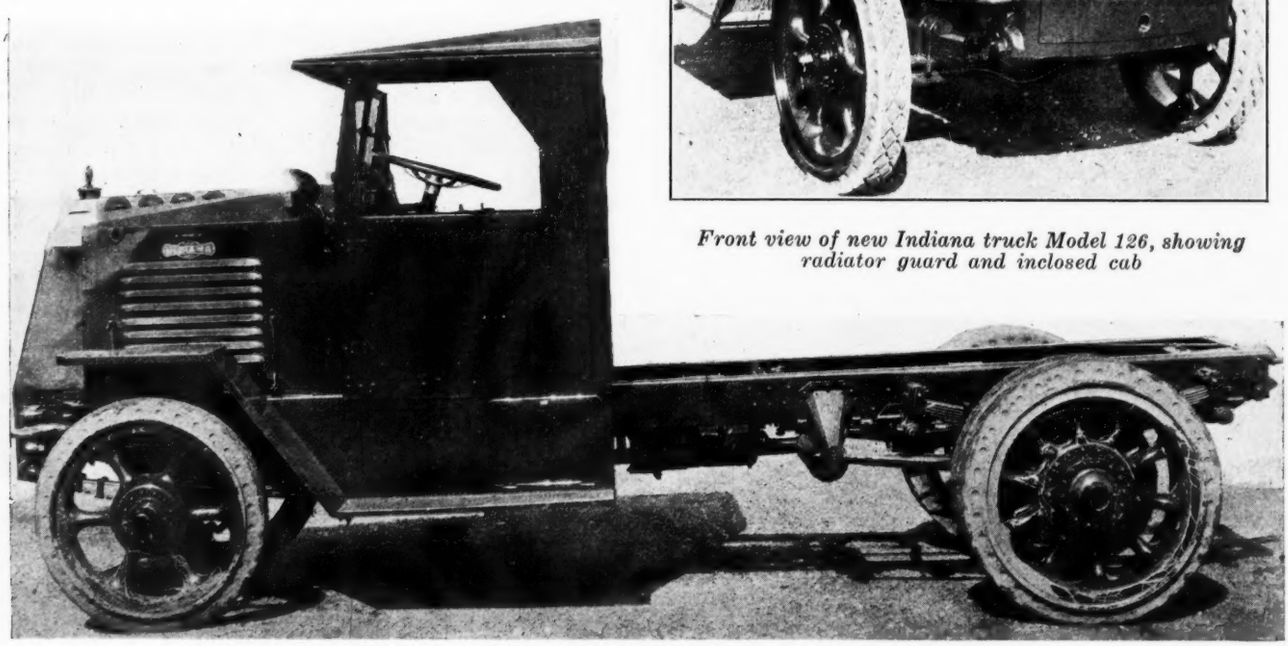
The rear axle is a Timken worm-drive, full-floating type, with 2 in. driveshaft. Its tread is 63 in. and the maximum weight permissible on the rear tires is 13,000 lb. A heat-treated steel forging of I-beam type, 3 in. deep by 2⅛ in. wide with 7/16 in. web, is employed for the front axle. The spindles are 2 in. in diameter and are made of chrome nickel steel, heat treated. The knuckle pin is 1⅛ in. in diameter and the weight is carried on a roller bearing on top of the steering knuckle.

The Ross type S cam-and-lever steering gear with 20 in. wheel is designed to provide easy steering. The pressed steel, channel-section frame members are 7 in. deep with 3 in. flanges and are made from 5/16 in. stock. Frame length varies from 106 in. for the dumping chassis through 138 in. for the standard chassis to 174 in. for the long chassis.

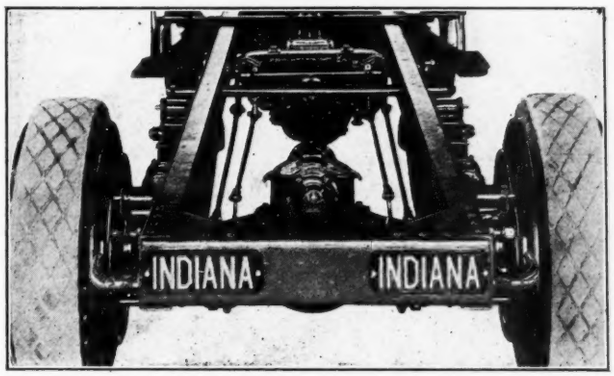
Silica-manganese steel springs are used. The front springs are 40 in. long, 2½ in. wide and made up of 10 leaves. Fifteen leaves make up the rear springs, which are 50 in. long and 3 in. wide. All spring eyes are bronze-bushed. Metal-spoke wheels are standard, with 36 by 5 in. solid tires front and 36 by 10 in. solids rear.

The standard gear ratio is 7¾ to 1. With solid tires the road speed on direct drive is 20 m.p.h. The cab is equipped with full length doors and full-ventilating windows. Both backs and seats are fitted

Front view of new Indiana truck Model 126, showing radiator guard and inclosed cab



Indiana Model 41 5-ton truck chassis which has been changed considerably



Rear view of Model 126 with worm-drive and tow hooks fitted

with coil springs to increase the driver's comfort.

Standard equipment includes Moto Meter, crowned front fenders, jack, radiator guard, front bumper, Prest-O-Lite headlights, oil tail-light, tow hooks, mileage recorder and air cleaner.

In addition to bringing out this new model the Indiana corporation has made extensive changes in its Model 41 5-ton chassis. The frame has been changed both in material and dimensions, so that it is 50 per cent stronger than the one used previously. The latest type Timken worm-drive rear axle fitted with 2 5/16 in. driveshaft is now employed. The tread of this axle is 69½ in. and the permissible load 24,000 lb.

Simplex-type brakes are fitted, operating on 24-in. drums, 4 in. wide, on the rear wheels. The loaded height of the frame has been decreased about 2 in. by employing wider and flatter springs with longer shackles, and by dropping the central portion of the front axle, including the spring pads.

The radiator is equipped with a guard instead of shutters and is mounted on pads of brake lining material instead of on rubber. Changes in the cab have made it more comfortable; the clutch throwout mechanism is now of link and pin construction, and provision has been made for mounting a Hercules Model G engine at no additional charge.

Ball Bearing Standards

INFORMAL negotiations with foreign standardizing bodies have been under way for some time looking toward the adoption of an American standard on metric thrust ball bearings that would conform to an international standard. A sub-division on Metric Thrust Ball Bearings of the Ball and Roller Bearing Division has weighed proposals received from abroad and also made a study of present American practice in this field. After duly weighing the proposals the sub-division came to the conclusion that it would be better to have an American standard for American practice, because the volume of metric thrust ball bearings made by American manufacturers is so small and the export business in such bearings so limited that it would be uneconomical to make extensive changes in American practice.

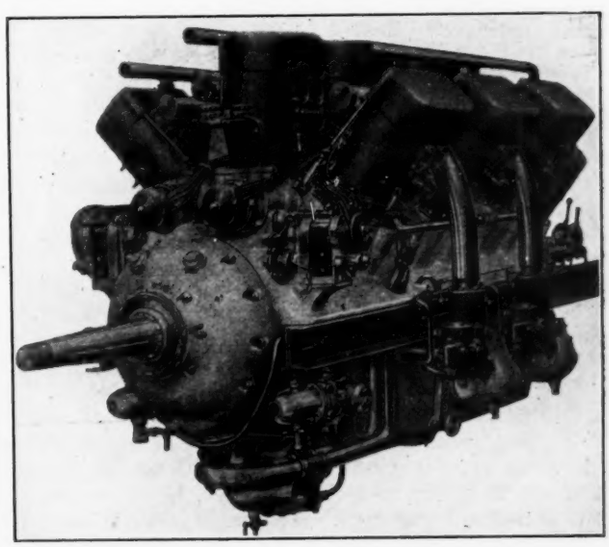
The proposed American standard is to be limited to four series now in use, viz., the medium and heavy series, single direction flat type; the medium series, single direction, spherical or self-aligning type, and the medium series, double direction, flat type. The dimensions used by the several bearing manufacturers generally agree with the present S. A. E. standard. The corner radii and fillet radii have been modified to conform to the revised annular ball bearing standard. A new method of designating sizes has been worked out and is recommended for adoption because it is simpler than the present method.

A Sub-Committee on Adapter Sleeve Bearings of the Sectional Committee on Ball Bearings has worked out a proposed standard for such bearings for shaft diameters up to 5 in. These bearings comprise a sleeve with a tapered outer surface having a taper of 1:12, and the inner race is bored out to a taper and fitted to the tapered sleeve by means of a nut and washer. The small diameter of the taper in the bearing is to equal the nominal bore of the corresponding size of annular bearing. This proposed standard, as well as that on metric thrust ball bearings, is to be included in a proposed American standard for ball bearings to be acted on by the American Engineering Standards Committee.

A proposed Recommended Practice for the center bearing and connections of three-joint propeller shafts has been revised to meet criticism that was passed on the original design when it was circulated among manufacturers. The design now submitted is intended for use with a self-aligning ball bearing. The slip joint on the forward section of the shaft has been eliminated, as the design of the housing permits the bearing to move endwise. In cases where a slip joint is used a special design of housing is required. The proposal covers (tubular) shaft sizes of from 2 to 3 in.

Various changes are proposed in the composition of S. A. E. steels. Higher sulphur and phosphorous limits recommended by the metallurgical department of the General Motors Corp. have been adopted by the Iron and Steel Division of the S. A. E. In general the limit on each element is 0.005 per cent higher than in the present S. A. E. specifications. In the case-hardening steels Nos. 2320, 3415 and 6120 the manganese limits have been changed to 0.30-0.60 per cent. A new case-hardening chrome-vanadium steel No. 6115, has been included in the list.

18-Cylinder Airplane Engine



THE Farman 18 WD, 700 hp. 18-cylinder engine, which with the 12-cylinder 500 hp. Farman has been largely influential in enabling France to achieve its present position as the leading air power in the world. These two engines in various types of planes probably hold more airplane world's records than the products of any other aircraft engine manufacturer

The Liquefaction Process of Deriving

Motor Fuel from Coal

Dr. Friedrich Bergius

Development has passed experimental stage in Germany. Short ton of bituminous made to yield 45 gal. of gasoline in addition to heavy oils and gas.

By Dr. Friedrich Bergius*

THREE different lines of work, differing in principle, have been followed in solving the problem of obtaining a substitute for natural oil from coal. The oldest and most widely discussed in chemical literature is a development of the well-known coal distillation process, usually called low-temperature distillation. The chemical reaction used in gas and coke oven plants for nearly a century was studied under different physical conditions and a series of technical means were tested and some of them practically applied.

There is no doubt that these processes will play a very important role in making a special kind of coke from coal, and for recovering a certain amount of low-temperature tar. But, as in these processes oil is merely a by-product, it is not likely that the quantity of oil recovered will ever figure in increasing the oil supply of the world to any great extent. The development of these processes will depend on the possible market for coke, their chief product.

Before taking up the second (historically) of the three principles, the question of direct liquefaction of coal by means of hydrogenation, I want to say something about the third, the synthetic manufacture of oils from coal products, in order to make clear the principal differences between these three lines of work.

The basis of chemical oil synthesis, the third of the three methods, is the building up of hydrocarbons from their chemical elements. A direct synthesis of hydrocarbons from carbon and hydrogen is possible but of no interest from the industrial standpoint. At certain temperatures the hydrocarbon methane can be made from carbon and hydrogen, and at much higher temperatures, acetylene and benzol can be formed directly; by using metallic carbides, liquid hydrocarbons can also be formed. But these reactions are interesting only from a scientific standpoint.

More than 12 years ago, a patent application was made by the Badische Anilin-und-Sodafabrik for a new reaction for synthesizing hydrocarbon compounds. As a reaction raw material, not the element carbon itself was used, but instead, carbon monoxide, which under high pressure and the presence of certain catalysts, combines with hydrogen to form hydrocarbons and hydrocarbon-oxygen compounds.

After a very thorough study of the catalytic influences of different contact materials, and of the effect of impurities in the gases, the well-known industrial process of making methanol and other alcohols was developed, and the conditions were established which made possible the production of either hydrocarbons or alcohols by the use of this catalytic reaction.

On the basis of this reaction, first described by the Badische Anilin-und-Sodafabrik, Franz Fischer in Germany, and General Patard and M. Audibert in France, have carried on considerable research and technical work to build up a process for the synthesis of motor fuel from carbon-monoxide and hydrogen.

Commercial Practicability of Synthesis

There is no doubt that, from the chemical and technical standpoint, this synthesis may be carried out successfully. However, it is uncertain whether the manufacture of motor fuel in this way can be made an economic success. The fact that the Badische Anilin-und-Sodafabrik, which discovered the reaction and whose experience in industrial high-pressure work is well known, uses this process only for the production of methanol and high-value alcohols and not for making motor fuel, seems to throw the economic possibility in doubt.

Years of experience in the synthetic ammonia industry and in developing the coal-liquefaction process have solved the problem of constructing and manipulating high-pressure apparatus, and the technical advantage produced by the reduction of gas volumes under high-pressure and the possibility of heat recovery in highly compressed gases, are such important factors in regard to economy that systems for such mass-production processes dealing with large quantities of gas are very attractive.

Natural coal and lignite are built up of two kinds of chemical compounds, one, the carbonaceous part,

* From a paper read at the International Conference on Bituminous Coal, Carnegie Institute of Technology, Pittsburgh, Pa. Dr. Bergius is an eminent German scientist who has been specializing on the transformation of coal into oil by means of hydrogen since 1913. Recently a plant for the application of his process on a large commercial scale was established at Mannheim-Rheinau, Germany.

which is derived from the cellulose and the lignite part of plants that formed the geological deposits, and the second, the bituminous part, derived from fats, albuminous material, resins, waxes and other accessory material. The carbonaceous material contains hydrogen, carbon and oxygen; the bituminous matter has a higher hydrogen content and a lower oxygen content.

Considering that in a normal bituminous coal the ratio between carbon and hydrogen is about 16 to 1, and in a liquid oil about 8 to 1, it follows that in order to transform coal into oil, the quantity of hydrogen has to be doubled. Hydrogen being an expensive material, it is important to conserve as much as possible of the original hydrogen content of the coal.

Hydrogen in Coal Must be Retained

But the distillation process, as well as the synthetic process, work precisely in the opposite direction. The distillation process yields fairly large quantities of free hydrogen from coal; the synthetic process separates the hydrogen and the carbon completely. In the latter process coal is transformed into coke and coke in turn is transformed into carbon-monoxide, which means that hydrogen is not only separated from carbon but that oxygen is added to carbon. The carbon-oxide is brought into reaction with new, specially-manufactured, elementary hydrogen, which is partly consumed for binding the oxygen and partly added to the carbon to establish the proper proportion mentioned before.

From the fact that hydrogen production means coal consumption, or consumption of energy in any other form, and that for making one weight-unit of hydrogen at least eight weight units of coke are necessary, it is evident that, from the standpoint of conservation of energy, it is most important to conserve the hydrogen bound to the carbon of the coal as much as possible while transforming coal into liquid hydrocarbons.

It is with this point in mind that the direct hydrogenation and liquefaction process of coal has been considered, planned and developed. In 1913, in my laboratory in Hanover, the direct addition of hydrogen to coal was first carried out. We called this reaction the coal-liquefaction process. Using the pre-formed hydrogen-carbon compounds of the coal, it was the intention to add sufficient hydrogen to transform the coal into oil.

Invention of coal-liquefaction was not accidental, but was the result of a long study of the chemical nature of coal, begun three years before. The coal-liquefaction reaction was first determined. My assistants and myself have endeavored since that time to come to a better understanding of the chemical nature of coal.

Many chemists believed at that time that coal was merely carbon mixed with some other impurities containing hydrogen. The methods of analytical chemistry then in use did not help in making a theoretical picture of the molecular construction of the compounds which form coal. It occurred to me that it might be possible to throw light on this question by building up a laboratory method simulating the process by which nature in the geological ages formed coal from plants. We proceeded to study the reaction of transforming cellulose and wood into coal by a special method. The synthetic coal produced was very similar to the natural product. By controlling the products and the reaction conditions, I formed an idea of the chemical structure of the chief reaction product, coal. I never published the constitutional formula which I had in mind when carrying out this research, because it was then only a working hypothesis and not easy to prove to a chemist as a tenable scientific theory.

But, whether right or wrong, the hypothesis proved to be a very valuable one because it classified coal into a group of chemical compounds, which under certain conditions are capable of taking on hydrogen. If our theory of coal structure was correct, then the addition of hydrogen meant transformation of coal into hydrocarbon molecules and the formation of some amount of water. This was the status of our research work in 1913.

At this point we were confronted by the question whether hydrogen could be forced into combination with the naturally indifferent coal, and by a method that could be applied practically. As long ago as 1869, with the old laboratory methods, the great French chemist Berthelot reduced carbon in this way. But this reduction was not suitable for practical purposes and was theoretically different from our idea of adding elementary hydrogen.

At this time, the catalytic hydrogenation of unsaturated compounds was being used in chemical laboratories and in chemical technique, especially in the hydrogenation and hardening of fats, and in the new synthetic ammonia industry. But it was evident that a catalytic process could not be used for material like coal, with the then limited knowledge of catalysts. Moreover, hydrogen did not react with coal under normal conditions and at temperatures at which coal was not totally decomposed. We discovered that under certain conditions, the same effect as that of catalysts may be obtained by a very high concentration of the reacting gas and we could realize the reaction by means of hydrogen under very high pressure. This meant that perhaps the solution of the coal-oil problem was at hand.

Difficulties of Large-Scale Operation

Great difficulties arose as soon as larger quantities were used for the reaction. Our first method no longer produced a solid hydrogen-oil material as a reaction product, but a cokey substance. The reason for this was found to lie in the fact that the hydrogenation reaction produced a large amount of heat, which could be led off only with difficulty from the system of gases and solid material. It was unavoidable, therefore, that superheating occurred by which the reaction temperature was increased to such a degree that coal-distillation replaced the hydrogenation reaction. We could overcome this new difficulty by carrying out the reaction in the presence of a liquid medium (coal oil).

We soon realized that liquefaction of coal involves a competition between two reactions—the reaction of hydrogen addition to the coal substance, and the reaction of destructive distillation of coal. Within a certain temperature range the velocity of hydrogenation reaction is greater than the velocity of the coking reaction. At higher temperatures the coking reaction is faster and results finally in the formation of coke instead of oil, even if the hydrogen pressure is high and hydrogen is brought into the closest possible contact with the coal.

The hydrogenation of coal begins at relatively low temperatures. Treated for some hours at a temperature of 300-350 deg. C., the product is still solid, but it has taken up a fairly large amount of hydrogen and is transformed into a sort of pitch with a fairly high melting point. This product becomes liquid if treatment is continued at a temperature of 420 deg. C.

From these facts it is readily understood that the coal liquefaction reaction process, regarded from the chemical standpoint, consists of two different reactions, the first, hydrogen addition, and the second, the splitting up of large molecules into smaller ones while new hydrogen is being added.

This second reaction involves the very same procedure as the splitting-off of heavy oil residues of tars at low temperatures in the presence of hydrogen under pressure, a process which has been carried through by us on a large scale. In other words, it is a cracking process in which hydrogen is absorbed. By changing the conditions, the relation between gases, light and heavy products can be varied.

Hydrogen enters the comparatively large molecular complex. The higher the temperature, the more the larger molecules are broken up into smaller ones, to which the hydrogen is added, thereby changing the unsaturated smaller molecules into saturated ones.

Typical representatives of the aliphatic, aromatic and hydro-aromatic series are found in the coal-liquefaction products, except, of course, the unsaturated compounds which cannot be formed in the presence of high-pressure hydrogen. Besides these chemical compounds those of phenolic character, chiefly kresol and ammonia, are among the products.

One of the most important questions of the chemical research work was to find out which quality of coal could be treated by the liquefaction method with best results. Nearly all kinds of coal and lignite, except anthracite, from most parts of the world were studied. Lignites have a little greater reaction velocity and are liquified more completely than bituminous, leaving only about 10 per cent of residual material, depending on the temperature used. About 50 per cent of the nitrogen of the coal is transformed into ammonia. The rest is found in the form of an organic base in the liquid products. The greatest part of the sulphur of the coal is transformed into sulphuretted hydrogen, one of the gases from which it can be easily recovered. One short ton of coal yields 107-185 gal. of oil. These figures are based on normal ash-containing samples, taken from the pits.

No Special Coals Required

It is often reported that coal-hydrogenation is only applicable to special coals, but I want to make it clear here that only anthracites, the real anthracites, and those also which consist chiefly of fusain material, cannot be hydrogenized. However, the hydrogenation reaction is applicable to all other coals, including lignites. The average yield is between 40 and 70 per cent when the ash contained is not higher than 10 per cent and the water contained is not higher than 5 per cent.

The products of the liquefaction process are quite different from the tars which are produced by distilling coal at high or low temperatures. One thousand pounds of coal give 150 lb. of marketable gasoline, 200 lb. of a middle-fraction including gasoline and impregnating oil, and a residue from which 60 lb. of lubricating oil and 80 lb. of fuel oil can be obtained. In other terms, one short ton of bituminous coal delivers about 45 gal. of gasoline, with an end point of about 437 deg. Fahr.

The gasoline fraction contains a very large quantity of aromatic and hydro-aromatic compounds and acts in an engine like a mixture of benzol and gasoline, eliminating knocking. When diluted with normal gasoline, a non-knocking motor fuel is produced.

The recovery of good lubricating oil was a very difficult problem in the beginning, but during the past year, in our laboratory as well as in the laboratory of the well-known German Tar-Combine, the Gesellschaft fur Teer-Verwertung, under the guidance of Dr. Spilker, good lubricating materials were produced from the coal oils. The phenolic part of the products contains normal cyclic phenols, kresol and xylols and no large molecules, as do low-temperature tars. It may be practical for America, which imports considerable quantities of kresotic oils, to recover them and to use them for impregnation purposes.

Mechanical Equipment

Even in the early stage of our research work we had to develop methods for carrying through the coal liquefaction in a continuous apparatus. A great many difficulties had to be overcome before such a continuous apparatus ran satisfactorily. The main problem lay in feeding a solid material like coal into the high-pressure apparatus, and in removing the inorganic residues and the small percentage of untransformed coal which remained, from the highly heated high-pressure vessels. After long study an arrangement was devised to meet this need. The coal is ground into small pieces not exceeding 2 mm. in diameter and is mixed with the heavy part of the oil from a prior operation, to a pasty, thick mass. The material in this form can be easily forced by specially designed pumps into the high-pressure vessels, in which the paste is heated together with the oil already contained in the vessel, to the reaction temperature. Hydrogen is pumped in at the same side of the vessel, which is equipped with a stirring rod. The reaction vessels can be combined. The whole of the reaction mass—gas, liquified coal, untransformed coal and ashes—is drawn out of the vessel and after cooling and reducing the pressure, the gas is separated from the liquid and solid material. It is evident that this expansion can be made after having fractionally condensed the oily products, and that the energy of the compressed gas can be recovered in special engines. We usually run such plants, having a capacity of two short tons in 24 hours, about six days continuously to determine the products which can be obtained from various sorts of coal or lignite.

We have two such units in our experimental station in Mannheim-Rheinau. Another is being erected by the Fuel Research Board of the British Government. A. Debo and K. Noack were instrumental in working out this method.

In 1916 we began the erection of a larger apparatus for working under high pressure and with temperatures ranging from 400 to 500 deg. C. For coal liquefaction, a pressure of at least 150 atmospheres, or better, 200 atmospheres, or a pressure of 2200 to 3000 lb. p. sq. in. is necessary. In designing the large apparatus, we had the collaboration of Professor Riedler and Professor Loeffler of Berlin. The largest part of the technical work of bringing this apparatus to a practical state was done by Richard Tillman and Arnold Debo. The method of working this apparatus is substantially the same as that in the experimental station. Besides designing the high-pressure apparatus, building pressure-tight enclosures, secure and safe stuffing boxes and valves, and especially the large measurement installations for controlling the plant, an arrangement for heating had to be devised which controlled temperatures exactly, for the process is very sensitive to temperature changes. If the temperature is too high, coke is formed; if it is too low, the reaction lags and the capacity of the apparatus becomes too small. Heating of such apparatus from outside of the

walls is impossible because the strength of the iron walls at working temperature is not very high, and it is even necessary to protect the walls from superheating. A compressed chemically inert gas, such as carbon-monoxide or nitrogen, is used as a heat transfer medium and is circulated by a pressure-pump. Through heat exchange between this cool gas and the hot reaction product, the latter is cooled, while the gas is heated. After having obtained the final necessary temperature in a special furnace, the heat-exchange gas enters the jacket surrounding the reaction chamber and returns to the circulating pump without being expanded. This heating arrangement allows very economical control of heat and temperatures, because practically all of the heat is recovered. We found that the recovery of heat from such highly compressed gases can be easily accomplished, and that only small surfaces are needed for the transmission of large quantities of heat.

Economics of the Process

The basis of calculating the economy of the process is the consumption of raw material and energy, wages and depreciation and cost on the one hand, and the value of the finished product on the other. Raw material is coal or lignite. As coal must be used in ground form it is obviously practical to utilize the fine coal and screenings which are nearly waste products. If a coal contains very large quantities of ash or fusain, washing-off by flotation will render it usable for the process.

The second raw material used in the process is hydrogen, and in the production of this material lies the fundamental point of the economy of the process. If coal-liquefaction had to depend on the usual hydrogen-manufacturing processes for its supply, then it would be difficult to make oil in competition with the natural product. Other big technical processes, as the synthesis of ammonia and fat-hardening, require very pure hydrogen because the processes are catalytic, but coal-liquefaction is indifferent to impurities in the gas. Coal will react with hydrogen, if the latter is in a mixture with other gases, as long as a sufficient concentration of hydrogen is present. On this basis, a new hydrogen process has been developed for coal-liquefaction. It consists in heating the gaseous reaction products in the presence of steam whereby the needed hydrogen is regenerated.

The chemical basis of this hydrogen process is the reaction between methane and water. At a temperature of about 1100 deg. C., one molecule of methane reacts with one molecule of water to give three molecules of hydrogen and one molecule of carbon-monoxide. The latter is transformed by the action of another molecule of steam at a temperature of about 700 deg. in the presence of a catalyst, into carbon-dioxide and hydrogen, so that the total effect of the reaction is a transformation of one molecule of methane into four molecules of hydrogen, theoretically.

Quite similar is the reaction between ethane and steam. By this means it has become possible to make a sufficient quantity of hydrogen from reaction-gases to sustain the process. A certain quantity of oil produced returns to the apparatus in the form of oil-paste, mixed with the coal. The addition of a small quantity of iron oxide has proved advantageous.

Besides the coal used for the reaction, obviously a quantity of coal is necessary for heating and for making the power necessary to compress the hydrogen. Obviously, as the process is being developed, it will become possible to decrease the quantities of coal used.

After spending some millions of dollars in a research station, employing an average of 150 men, the coal liquefaction process was worked out in a technically practicable and economically satisfactory form. When this point was reached last year, the erection of two big factories for coal-liquefaction was begun in Germany, one in the lignite territory under the auspices of the coal dye group, especially the Badische Anilin-und-Sodafabrik, the other in the Ruhr territory by the Gesellschaft fur Teer-Verwertung under the management of Dr. Spilker. The total production of these two plants will be nearly 1,000,000 barrels a year of the different oily products.

The coal-liquefaction process can be worked in many different ways. That explained makes the process fully independent of any material or industrial supply other than coal. It may be used wherever coal or lignite is to be had. From the financial and economic point of view, a plant for the liquefaction of coal must be compared with the technical equipment and machinery necessary for the pumping of crude oil from the sand, the pipe line and the additional equipment for refining the crude oil and producing the various distillates thereof, namely, gasoline, Diesel oil, lubricating oil, etc. This viewpoint may seem illogical as the coal-pit installation is not included, but since fine coal and screenings and easily recoverable lignites are available in large quantities, and can be economically used, it is justified.

There is still another factor in favor of coal-liquefaction, and that is stability of production. A coal deposit can be depended upon to yield its product much longer than any oil field.

Providence has given this country such a generous supply of the natural product, crude oil, that any process for producing the same synthetically may seem of hardly more than scientific interest, at least for the time being. And yet there are applications of this process which may even right now be of importance to some of the largest industries of the country.

Part of the oil produced by the process is used for making the original powdered coal into a paste. Together with the coal it goes through the process once more, that is to say the oil is once more split up and hydrogenated in the apparatus.

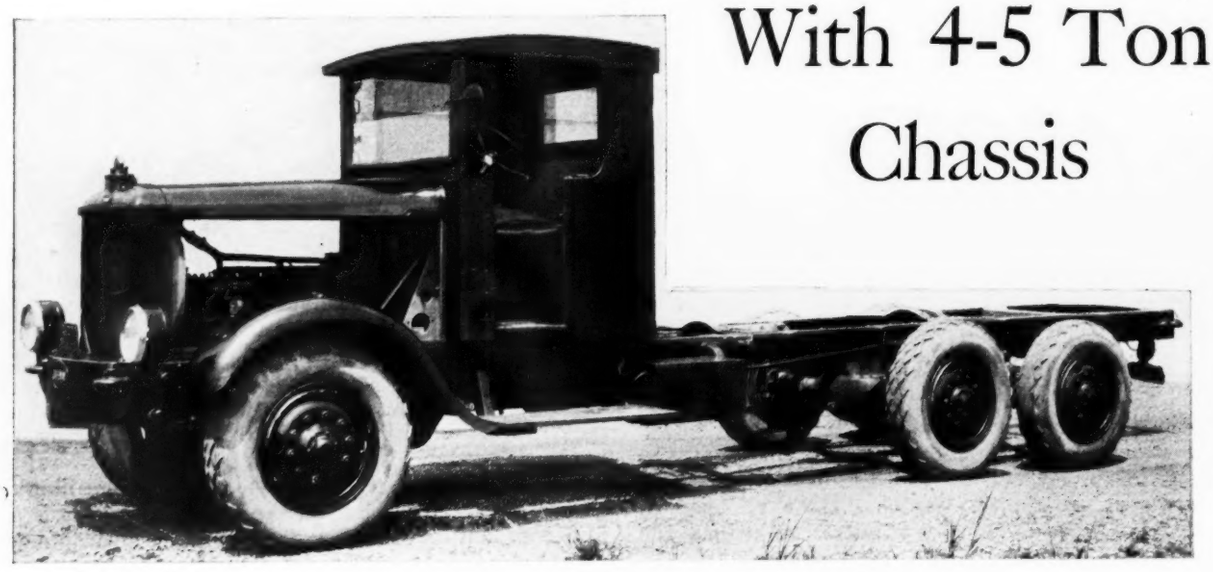
Will Make Coke-Oven Tar Valuable

We have found, however, that instead of part of the oil produced in our process, we can just as well use coke-oven tar or low-temperature tar, both of which are available ordinarily in large quantities in this country. The tars are split up and hydrogenated together with the coal and are thereby converted into products of much higher value, practically the same as if we had used our own oil. This fact is particularly interesting in view of the difficulties connected with the conversion of low-temperature tars and pitches into more valuable and marketable products.

Even more important to this country may be another application of the hydrogenation process. As pointed out previously, from 15 to 20 per cent of the coal fed into the apparatus is converted into methane and ethane. Expressed in heat value, the gas produced by the coal-liquefaction process is equivalent to the gas obtained from coal by the ordinary coking process for the production of lighting gas.

In other words, a coal-liquefaction plant can well be looked upon as a highly improved ordinary gas plant, for the simple reason that the gas produced has the same heat value, while our by-product, oil, is worth more than the coke of the ordinary gas plant.

Six-Wheel Co. Enters Truck Field With 4-5 Ton Chassis



General view of new Six-Wheel 4-5 ton truck chassis

Six-cylinder Continental engine used. Transmission has two speed ranges. B-K booster operates four-wheel brakes.

THE Six-Wheel Co. of Philadelphia, which has been building six-wheel buses for several years, has now turned its attention to the truck field and is bringing out a 4-5 ton six-wheel chassis to augment its bus line. The truck is powered with a six-cylinder Continental motor of 4½ in. bore and 5¾ in. stroke developing 102 hp. at 1800 r.p.m., which is the governed speed, a Pierce governor being fitted.

Lubrication is by forced feed to main connecting rod and camshaft bearings, with fresh oil supply to the cylinder walls. Chassis lubrication is by the Myers magazine system. A Stromberg Model OT-3 carburetor is connected to a hot air stove around the exhaust manifold, thus providing a variable hot spot. Battery type ignition is employed with a North East distributor equipped with full automatic spark advance. North East 12-volt system is used for electric starting and lighting. A Willard 12-volt battery is provided.

The radiator is truck type with vertical tubular core of sufficient size to properly cool the engine under adverse conditions. The tubes are soldered to horizontal fins. Top tank and sides are of cast aluminum and bottom tank of cast iron. A 26-in. diameter fan operating at slow speed provides air circulation with a minimum of power consumption.

Brown-Lipe equipment is used for clutch and transmission. The former is the multiple dry disk type. The transmission has two speed ranges, providing seven speeds forward and two reverse. It is located amidships with three-point suspension. On low gear there is a 9.5 to 1 reduction, on high-direct, and on the overdrive 0.78 to 1. An S.A.E. standard power take-off opening is provided.

Spicer metallic equipment is used in propeller shaft and universal joint. The steering gear is the cam and lever type with a 20-in. steering wheel. Both front and rear axles are of Timken make. The rear axles are full floating, worm-drive type and are assembled in tandem under the Templin patents in accordance with Six-Wheel Co. practice.

The hand and foot brakes operate independently on all four rear wheels through separate B-K vacuum boosters. Either set of brakes by itself is more than enough to give adequate braking without additional force being applied by the driver. The four brake drums are 17¼ in. diameter by 5 in. wide.

Heat-treated, chrome-nickel steel is used in the frame, which is thoroughly braced and gussetted at top and bottom. Frame sections are 8 in. deep with 3 in. flanges, and ¼ in. thick.

The springs are of silico-manganese, heat-treated steel and the spring eyes are bronzed bushed and double wrapped. Budd-Michelin disk wheels are standard equipment, mounting 36 x 8 heavy-duty pneumatic truck type tires on all six wheels.

A 45-gal. capacity, fully welded steel gasoline tank is located under the seat. Standard equipment includes electric head, tail and stoplights and electric horn, spare wheel and rim and full set of tools.

Normal capacity of the truck is 4 tons with a maximum of 5 tons. The body weight allowance is 2500 lb. The chassis weighs 9000 lb. Maximum speeds in various gears range from 27.5 m.p.h. to 38.5 m.p.h. in direct drive and from 35.6 m.p.h. to 49.5 m.p.h. in overdrive.

Track front and rear is 66½ in. Frame width is 36 in. Maximum width of chassis at fenders is 82⅞ in. Frame height loaded is 32½ in. at the front and 34 in. at the rear.

The truck has a wheelbase of 190 in. Frame length back of the seat is 191 9/16 in. Overall length is 309⅛ in. Maximum recommended body length is 16 ft. Turning radius is 30 ft. 6 in.

Just Among Ourselves

The Business Press Gets a Bouquet

G. C. MILLER, president, Dodge Manufacturing Corp., told a convention of business paper publishers and editors the other day that the business press doesn't realize the value of its advertising and editorial pages. A. J. Brosseau, president, Mack Trucks, Inc., said to the same meeting that he couldn't quite see why the business publication is not a more important part of the advertising scheme of a greater number of industrial advertisers. Naturally we approve heartily of these statements from such important executives. They bring to our mind a multitude of thoughts which, you will be glad to know, will be omitted from this column on the theory that you are much more interested in your own business than in ours. As a matter of fact we can think of several reasons to account for the condition referred to by Mr. Brosseau—and so can Mr. Brosseau, as was evidenced by the remainder of his talk on the occasion mentioned. For one thing, it's our belief that the business press only in recent years has fully caught the notion that it must interest as well as inform its readers. Then, too, there is the matter of authority and accuracy; the business press today is doing an outstanding job along these lines despite occasional detours from the highway of exactitude. Then there is . . . but that's enough of our own interests . . . .

* * *

Ideas From the Advertising Pages

ONE more thing that Mr. Miller said, however, we will venture to tell about, because it has a suggestion perhaps for every automotive man. "My job," Mr. Miller said, "is to look for ideas. The first place I look is in the advertising pages of the eight business papers which I read regularly. The second place is in the editorial pages." We feel the necessity of printing this to show how one important executive constantly uses the business paper as a working tool and incidentally to prove to ourselves that our personal inferiority complex isn't too strong. It's a bit 'umblin' to the editor, is Mr. Miller's statement, but competition between the advertising and editorial pages for the interest of the reader tends to raise the quality of both and we try to soothe our lacerated feelings with the belief that we might be able to get somebody to stand up for the editor if necessary. But after all, it isn't necessary, because the man who reads his business paper regularly and uses it as a source of ideas and inspiration, sooner or later is bound to find the real value which lies in both the editorial and advertising sections.

* * *

Offering a Selection of Body Colors

THE general public desire for varied hues on automobile bodies is being met in several ways. Some makers are changing colors on every model periodically, others are rotating color combinations from one model to another, and still others are furnishing cars to dealers in prime coats so that the latter may give their prospects any color combination desired. That dealers look with some favor on this latter method is indicated by Studebaker's experience. "We have been trying for some time to interest our dealers in putting in a lacquer refinishing department," writes K. D. Bell, general service superintendent of the South Bend organization," or at least equipment for touching up cars refinished in this material. Any of our models can be obtained by the dealer in prime coat and many retailers take advantage of this feature quite frequently."

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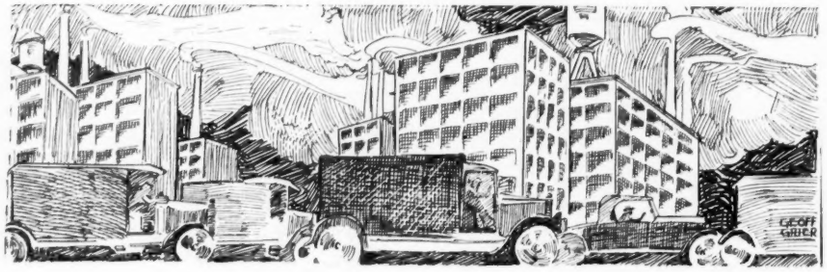
American Features Copied in Europe

JUST as some British manufacturers are trying to take their American competitors for a little buggy ride by making advertising capital out of the fact that some of our new models are being announced as European cars, there drifts into our mail an interesting letter from F. F. Paul of United Air Cleaner, indicating that our foreign friends are not at all averse to picking off good points in American design wherever possible. "As you know," Mr. Paul writes, "American cars have been well represented at the European shows this fall. A number of these cars, such as the Lincoln and the Chrysler '80,' are equipped with a United Air Cleaner. Since these shows our company has been deluged with cablegrams and orders from foreign countries. Last week we received one order from a German concern for 4000 air cleaners and foreign manufacturers almost without exception are showing an interest in units of this kind." All of which bears out in a specific way our reports of the foreign shows from W. F. Bradley, who showed clearly that European design this year is tending very strongly to imitate American practice—which perhaps takes a bit of the edge off some of the British advertising which we have just seen alluding to American advertisements of "European type cars." One of these ads concludes with, "Britain leads, America follows. We thank America for this latest little compliment, but continue to lead in the light car line."—N. G. S.

S. A. E. Discusses Wide Range of Transportation Problems

Interest at Boston meeting centers around coordination of rail and motor traffic and legislative regulation.

By Norman G. Shidle



FOUR HUNDRED automotive engineers, truck and bus operators, steam and electric railway representatives and students of the economics of motor transportation gathered in Boston Nov. 16-18 for the annual transportation and service meeting of the Society of Automotive Engineers.

Despite the sponsorship of the sessions by the engineering organization, the topics touched upon ranged far, far away from technical realms, the most vital discussions of the meeting hinging around coordination of motor and rail traffic, legislative regulation of commercial motor vehicles, use of container cars and the question of whether independent companies or the established rail lines should be the operators of the motor truck and bus services which the public is demanding now and for the future.

True, each of these major questions has certain very definite engineering aspects and two entire sessions at the meeting—those on maintenance and tires—were quite distinctly engineering in character. But as years go on, it becomes more and more apparent that the industry must come to look upon this particular S.A.E. meeting as the normal and regular place for the bringing together of ideas and opinions concerning almost every phase of the motor transport problem. It is practically the only meeting of its sort scheduled regularly year after year, although there have been many temporary and semi-temporary conferences which have accomplished a vast amount of good along similar lines.

Full Significance Not Realized

That the full significance of the annual S.A.E. transportation meeting is not yet realized by all of the executives of the automotive industry is indicated by the fact that while a number of representative railway men, and many important operators were in attendance, only 11 motor truck companies had representatives at the gathering. As time goes on this transportation meeting seems certain to be recognized by truck and bus executives of the industry as one of real importance to them.

Much that was significant in the sessions is difficult to convey in the written word. A few new points were brought out in the various papers, many old ones were argued over again with renewed vigor and on the basis of additional fact data. But throughout the gathering, both in the formal meetings and in the informal hallway discussions, there were an intensity of interest and a virility of discussion which appear at few gatherings in these heavily over-conventioned times of ours.

One of the chief impressions resulting from the sessions is that many of the steam railroads, however extensive their motor vehicle operations, still approach the newer form of transportation with a somewhat reluctant attitude and tend to utilize its possibilities only after most other means of providing a given service are exhausted. While there is a very general agreement between rail and motor industries as regards the necessities and possibilities of coordination of the two types of service, an undercurrent of opposition—rising to the surface every so often—still runs through most meetings which discuss this topic. And the sessions of the S.A.E. transportation meeting were no exception in this regard.

In the very first session on Tuesday morning, as a matter of fact, differences—varying in degree of intensity according to the individuals holding them—cropped out clearly.

W. P. Kellet, replying to some questions asked in regard to points made in his paper on "Scientific Transportation," let fall the statement that "The railroads will have to get into the transportation business; they never have been in the transportation business yet."

As might be expected, that statement brought a forceful rebuttal from the railroad men present, led by C. E. Lake of the Chesapeake & Ohio. "The railroads have been in the transportation business," Mr. Lake stated quite definitely, "but their old systems will not do forever." Nor can the railroads hope, Mr. Lake pointed out, ever to develop a system of trans-

portation which will be satisfactory forever. They must constantly be ready to progress.

There was very general support of Mr. Lake's contentions in this respect by the automotive as well as by the railroad men present. "The railroads," Mr. Lake continued, "cannot fairly be said to be opposing the development of any form of transportation. They assume in practically every case that what is good for the community will in the long run be good for the railroads."

Apropos of this latter statement, F. C. Horner, General Motors Corp., made the point that it might be possible for the railroads, while refraining from definite opposition to any form of transportation, to retard the rate of progress of any given medium very materially by a systematic policy of watchful waiting. There is far less tendency to adopt such a policy today, Mr. Horner, said, however, than there has been in the past.

The Railroad Viewpoint

As further clarifying the railroad viewpoint on motor transportation, the talk made by Arthur P. Russell, president, New England Transportation Co., had several points of special significance. Outlining the policies of the New York, New Haven & Hartford in its venture into the field of bus transportation, Mr. Russell made two points, which, placed one alongside the other, are of peculiar interest. The first point was that the N. Y., N. H. & H. holds that the transportation of the public *rightfully belongs* to the railroads and street railways and that these two should be "permitted to continue to perform that transportation service which the public demands." The second statement was that "the N. Y., N. H. & H. entered this new field of transportation only with the greatest reluctance."

Regulation of motor vehicles came in for some discussion, notably in the talk made at the transportation dinner by Senator-elect David I. Walsh of Massachusetts and in the paper on "Economics of Coordination of Motor Vehicle with Steam and Electric Transportation" read by Dr. G. Lloyd Wilson, University of Pennsylvania, at the second session on the opening day. Senator Walsh said that he was going to Washington with a completely open mind as regards the advisability of Federal regulation of truck or bus transportation at this time. If he becomes convinced of the necessity for such legislation, the senator stated, he will do his best to make certain that such legislation as is passed will be entirely fair to the transportation industry and to the public.

Dr. Wilson, after outlining the various ways in which the motor truck can economically serve in improving our present transportation facilities, concluded his discussion as follows:

"The motor vehicle, having already established its usefulness in terminal, short-haul and special freight services, is tending to become a major part of our transportation system. The coordination of this invaluable instrumentality with steam railroad transportation, electric railways and steamship facilities will assist all of these agencies to substitute more economical for less efficient methods of transportation.

"The coordination of all transportation facilities can be most easily brought about by permitting all carriers to make through joint rates, maintaining joint services and subjecting all carriers (rail, water, motor and eventually air) to regulation respecting rates, fares, rules, regulations and services by the same state and Federal regulatory bodies."

The large place that the container is likely to play in our future transportation scheme was made clear in two papers in the opening session, the first by Mr. Kellet and the second by Donald W. Perin, Perin-Walsh Co.

Conversations following this session indicated a general approval of containers on the part of those present, but a concomitant full realization of the very great practical difficulties in the way of using containers on anything like a universal basis. Probably it could fairly be said that the general opinion is that containers are all right, but that greater use of them will have to come gradually rather than rapidly.

When some of the practical difficulties of the plan advocated by Mr. Kellet were brought up, Mr. Kellet stated his belief that container car service should and would become universal.

It was brought up in discussion, however, that, in order to make container use universal, freight station platform elevations would have to be changed. This would involve tremendous capital expense, and could not be done easily, because capital expense is one thing the railroads have to avoid.

Mr. Kellet's answer to this was, "You can't race a truck horse against Man-o-War. Railroads will never eliminate the truck completely until they are willing to provide efficient transportation and to make the investment necessary to provide such transportation."

A. J. Scaife, White Motor Co., brought up the practical operation troubles with containers, pointing out that 10 men and a boy are needed sometimes to move containers when castors have become clogged or frozen stiff. Mr. Kellet's statement that one man can handle a 5-ton container was strongly disputed by a number of those present.

That real progress is being made in improving the mutual understanding of problems and possibilities between the rail and motor carriers was evidenced by the number of railroad men attending the S. A. E. sessions in general and particularly by the resolution which was passed looking toward the formation of a

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DAVID I. WALSH, senator-elect from Massachusetts, was one of the principal speakers at the Transportation Dinner, which was attended by more than 400 members and guests.

Senator Walsh, after tracing briefly the growth of the transportation industry, made clear his stand on three points most vital to the automotive industry.

He pledged himself:

1. To support the continuance of Federal aid for highway development and construction.

2. To work for the removal of the nuisance taxes which still burden the automotive industry.

3. To preserve an open mind for the time being as regards Federal regulation of buses and trucks and, if convinced of the need for such regulation, to work for such legislation as will be entirely fair, both to the automotive industry and the public.

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permanent committee to further practical and constant cooperation between the two fields.

The resolution was favorably acted upon by the meeting on the opening day. It was prepared by a committee appointed by the chairman of the Tuesday afternoon session, F. J. Scarr, Pennsylvania Railroad. The committee was headed by F. I. Hardy, Boston & Maine R. R., and had as members F. C. Horner, J. G. Lyne, R. E. Plimpton, and J. F. Winchester. Following is the text of the resolution:

> Your Committee submits the following report and respectfully suggests that it be adopted as the sense of this meeting:
>
> 1. There is a definite necessity for agreement on fundamentals of automotive freight transportation in its relation to other transportation facilities. It is believed that the Society of Automotive Engineers should sponsor a study of these fundamentals.
>
> 2. These fundamentals should be established and defined by a joint committee representing the Society of Automotive Engineers, the National Automobile Chamber of Commerce and the Railroad Motor Transport Conference. The committee should consist of three representatives of the Society of Automotive Engineers, three of the National Automobile Chamber of Commerce and five of the Railroad Motor Transport Conference. The committee of representatives of the automotive organizations should include not less than three members actively engaged in the solution of motor transport problems.
>
> 3. It is requested that this resolution be transmitted to the Council of the Society of Automotive Engineers, and that it be acted upon favorably at an early date.

The technical problems of motor truck and bus operation and maintenance were discussed in some detail at several of the sessions, while some of the designing and engineering problems brought about by specific operating requirements also got considerable attention. Several important operators, notably J. F. Winchester, Standard Oil Co. of N. J., and C. S. Lyon, Motor Haulage Shop & Garage Corp. of New York, told the automotive engineers some constructive ideas as regards truck design based upon analysis of very carefully kept records in their operating experiences.

Mr. Winchester in particular made a number of points of special interest to the truck factory executive and engineer. In his paper on "Fleet Maintenance" he said in part:

"I have seen mistakes in the original specifications or selection of vehicles charged up to maintenance or repairs, when they should have been charged in a column that might have been headed with either of the following examples:

"Expense caused by wrong selection of vehicle.

"Expense caused by wrong original vehicle specifications.

"Expense caused by manufacturer's poor service organization.

"Expense caused by high pressure salesmanship.

"Now, consider chassis weights. While there is no established standard upon which to make a decision between the various types and sizes, it can be pointed out that for the carrying of a given load there is a wide variation of weights between makes.

"I am reasonably certain that there is a distinct opportunity for engineering to make improvements along the line of better balanced weights for given types of vehicles. It seems ridiculous to classify for a 1-ton job a vehicle weighing 1500 lb., when in a similar class of vehicle which is classified from ¾ to 1¼-ton capacity, the nearest approach to this is a chassis weight of approximately 2980 lb. Different discrepancies of a similar nature can be found by consulting specifications.

"Then again, take the broader view of the entire vehicle. My investigation leads me to believe that often prejudices spring up in relation to individual design that should not be retained in one's mind in the face of improved designs.

Four-Wheel Drive an Example

"A definite example of this is illustrated by the four-wheel drive. There is a definite field for this type of vehicle. We are apt to judge it from the use of war-time designs and products, which under the stress of those conditions resulted in vehicles being turned out which were not altogether satisfactory from various angles. However, an investigation of this subject will show all concerned that distinct improvements have been made which might result in enabling us to reduce maintenance in a given field by an application of such types of improved design.

"In truck and bus design we see a tendency to experiment with six wheels under a given vehicle. To my mind, this seems a logical way to reduce road shock and permit of the carrying of larger pay loads in both cases, as it distributes the load on the road over a larger area and reduces road shock.

"The education of personnel is important. It has been neglected in the operation and maintenance end of the industry with woeful results. There has been a tendency by executives and engineers in high positions to scoff at the lack of fundamental training of personnel with whom they have come in contact, when the fault could be traced in many instances to their own short-sightedness.

"The majority of automotive equipment operated in fleets of four or more is serviced in the shop of the concern owning it. This condition is the possible result of neglect on the part of the manufacturer or his agent. They failed to see the opportunity for service to their clients along profitable lines. Or this

PROF. W. J. CUNNINGHAM of Harvard University, speaking at the Transportation Dinner, gave figures showing that there is about $18,000,000,000 invested in motor vehicles, and only $6,000,000,000 in railroad rolling stock. The cost of freight houses, terminals, equipment, etc., would add another $17,000,000 to the total sum invested in railroads, but if the value of roads were added to the automotive investment the latter would greatly exceed the railroad figure.

Prof. Cunningham stated that the cost of one mile of concrete road was equivalent to one mile of railroad capitalization.

The highways are carrying greater passenger volume outside of city limits than railroads but the railroads carry 40 times the volume of freight.

He believes that store-door delivery is bound to come. In reference to railroad passenger business, local passenger traffic has decreased 5 per cent per year, but long distance traffic has increased.

condition may be due to competition in the industry itself, which resulted in the creation of that slogan 'Free Service,' that was in the past so glibly offered by the salesman who, in the majority of cases, had no real interest except the original commission at stake."

While Mr. Lyon devoted most of his talk to a detailed description of the successful operating methods which are being employed by the organization which he represented, he pointed also to an interesting experiment which it is making with duralumin van bodies. The Motor Haulage Corp. has had constructed by the Aluminum Corp. of America a duralumin van body which is much lighter than a composite body of similar capacity and strength. It has been in service for a number of months and has been working out very satisfactorily. His company is now working with the Aluminum Corp. to develop rack as well as van bodies of duralumin construction.

Tires Subject of Interesting Technical Session

PROBABLY the most interesting session from a purely technical standpoint was the tire session held on the last afternoon of the meeting. Five papers were read at this session treating of practically every type and condition of tire use in truck or bus operation.

J. M. Linforth, talking on the importance of tire service in bus and truck operations, presented the results of an analysis for tire changes in operation and stated among other things that "we find in many instances that the number of road delays traceable to tires and tubes follows very closely the peak hours of motor bus operation, or rather at hours when traffic is heaviest and when interruptions to schedules are most costly and inconvenient." The analysis also indicated that temperature changes often are reflected quite directly in increased tire troubles.

L. W. Fox, Firestone Tire & Rubber Co., talking on "Economic Solid Tire Operation," made the point that, "It has proved impractical to make definite recommendations of tire equipment for vehicles of a particular load rating before they go into service. This is brought about through the variation in wheel bases, location and type of body, and actual load carried.

"Operators also differ," he continued, "in their ideas of economical loading, varying from rated load to 100 per cent over load." He then went on to give the reasons for solid tire wear and outlined means of minimizing or correcting the difficulties which arise in operation.

Truck manufacturers were accused of being responsible for much of the lack of satisfactory tire performance by A. L. Schoff, Overman Cushion Tire Co., who talked on "Cushion Tires and Their Effect on the Operator's Problem." "There are too few trucks produced even today," Mr. Schoff said, "which are so arranged that the operator can install on the vehicle the oversize tires which he finds necessary without making expensive alterations of either wheels or bodies or both. This statement holds equally true for trucks produced with pneumatics, solids or cushions."

Mr. Schoff outlined the following qualities as desirable in a cushion tire:

1. Maximum cushioning consistent with long mileage.
2. Cushioning which is affected to the minimum extent by tire wear or aging.
3. Suitable tractive and non-skid properties.
4. Safe lateral control.
5. Low cost per mile of operation.
6. Toughness to resist abrasion—cutting.

In motor truck impact reactions, said James A. Buchanan, Bureau of Public Roads, the unsprung component is generally the major quantity and the force depends on four principal variables: tire equipment, load, speed and road roughness. Other conclusions of Mr. Buchanan's paper on "The Motor Truck Tire and Its Relation to the Vehicle and the Road," may be summarized as follows:

> That tire equipment which utilizes a greater time of duration for the reaction will cause lower impact forces. Increases in load, speed and road roughness increase the impact reaction.
>
> Poor tire equipments on rough roads may cause forces of 35 tons to be borne by both the truck and the road. Pneumatic tires rarely permit reaction greater than twice the static wheel load. Six-wheel truck impact reactions approximate one-half those of an otherwise equivalent four-wheel truck with the same pay load.
>
> Fifty per cent loss in overall tire height multiplies the impact reaction by 2.5. Rolling resistance varies with speed, tire equipment and road surface, and may reach a value of one-sixteenth the wheel load. Gasoline consumption at 10 m.p.h. on solid tires equals that at 25 m.p.h. on pneumatic tires.

While general ideas to be drawn from the less technical papers of the meetings are fairly well summarized in the opening pages of this article, a number of specific points of pertinent interest to factory executives were made by many of the speakers.

The subjects of store-door delivery and door-to-door transportation service were touched upon by several speakers as was the topic of training adequate service personnel to take care of the maintenance needs of the growing motor transport industry.

Mr. Kellet in his paper on "Scientific Transportation" pointed out that "any intelligent investigation of railway versus highway transportation by motor truck must lead to the inevitable conclusion that, in so far as road haul cost per ton mile is a factor in the overall cost of door-to-door transportation, the motor truck is not now—or is it ever likely to become—a successful competitor of the railways. The motor truck as a competitor for short haul business survives for the reason that, having no expensive terminal facilities to maintain, and being able through direct door-to-door service to eliminate the heavy cost of freight shed handling, it is able to give the people the type of service which they demand, namely, *expedited service at freight rates* plus a moderate charge for terminal pick-up and delivery.

Railway's Greatest Strength

"The railway's element of greatest strength," he continued, "as a transportation medium is its low cost per ton mile of road haul—its greatest weakness is in the performance of terminal service, in which it dissipates much of its revenue gained in road haul. The motor truck, on the other hand, is abnormally efficient in that element of transportation service in which the railway shows its greatest weakness, and least efficient in that function of transportation in which the railway is supreme. The motor truck must look for its profit in terminal service. The moment it takes to the road for long hauls it begins to lose money, so that the distance over which it can compete successfully with the railway is determined by the savings effected in the terminal areas and the extent to which it can afford to squander these savings in a road haul costing per ton mile six to eight times that of its steam rival.

"The peculiarities inherent in these two systems of transportation—each possessing greatest strength where the other displays its greatest weakness—present an ideal basis for coordination of service along sane rational lines which will inure to the benefit of both systems of transport and to the general public as well.

"Motor truck freight haulage in competition with our railways is *wasteful, unsound in principle and unnecessary,* but it will continue and expand until our railways offer a better service for less money."

D. W. Perin, showing the advantages of unit container systems, summarized those advantages as follows:

To shippers:

1. Savings in packing expense.
2. Convenience of handling in warehouses.
3. Faster service.
4. Lower rates.
5. Later closing time for acceptance of shipments by railroads.
6. Reduction of loss and damage claims, and cost of making claims.
7. Reduction in highway transportation costs between freight stations and shipper and consignee.

To railroads:

1. Reduction of checking at points of origin and destination.
2. Reduction of handling at break-bulk and transfer points.
3. Reduction of congestion at freight terminals and break-bulk points.
4. Reduction of expense of terminal buildings and handling equipment.
5. Increased car-loading.
6. Reduction of idle time of freight cars.
7. Increased efficiency of rolling stock.
8. Reduction of loss and damage claims.
9. Makes tracing easier.
10. Retrieves part of freight lost to inter-city truckmen.

Discussing "The Railroad Freight Terminal," Bruce W. Crandall, *The Railway Review,* emphasized the importance of properly placing railroad terminals in the future and raised the question as to who should bear the ultimate cost of making relocations of present terminals where such action becomes necessary. "The motor truck," said Mr. Crandall, "is the key to the whole terminal situation."

Urges Direct Factory Control of Service

A. H. LEIPERT, International Motor Co., in a paper presented by F. B. Whittemore, strongly supported direct factory control of service as being necessary if satisfactory service is to be given. He outlined specifically the methods being used in a number of the stations under his supervision.

G. T. Seely, Chicago Motor Coach Co., in a paper which was read by F. C. Horner, said that "a survey of a large number of bus operations in various parts of the country leads one to the conclusion that in the present stage of bus development two very important considerations are:

"First: Standardization of equipment on the smallest possible number of types and makes.

"Second: Establishment of a standard of maintenance as nearly as possible 100 per cent perfect."

Then he continued:

"The principal development of bus operation from now on will be the merging of small operations conducted by individuals or very small companies into larger systems; the growth of existing systems as the territories through which the lines are operated are developed, and the replacement in many instances of unprofitable electric railway and steam railway passenger service by bus operation.

"From my observation, I believe that standardization is not considered in 75 per cent of the purchases of bus equipment. I have seen examples of as many as eight different makes of buses in fleets of from 100 to 200 buses, and this variety was not caused by the acquisition of operating companies, but by direct purchase of new equipment. The decision as to the make of bus is made in many instances by the financial heads because of interlocking directorates, power customers, freight consignments by big manufacturers, political favors done by local representatives of manufacturers, acceptance of stock in payment for commissions, and like reasons."

U. S. Railroads Stand High

Dr. G. Lloyd Wilson, in addition to urging reasonable governmental regulation of motor transport operations, spoke in part as follows:

"Not only are the railroads of the United States unique among the railways of the world in length, tractive force of locomotives, carrying capacity of freight cars, comfort and luxury of passenger cars and the character of special services performed, but in the comparative efficiency in line-haul terminal-to-terminal operation.

"Absolute comparable freight-rate figures are not available because of differences in national currency and the lack of accurate data for the same years. The following table indicates fairly accurately the comparison of railroad freight receipts per ton per mile in the United States and other leading nations of the world in terms of American currency.

Nation	Freight Receipts Per Ton Per Mile	Year
United States	$.0109	1925 (Class I Carriers)
Great Britain	.0284	1924
France	.0128	1913 (Later years impossible to use as comparison due to depreciation of currency)
Germany	.0137	1913
Norway	.0447	1923-24
Sweden (State Railways)	.0279	1923
Japan	.0139	1923
China	.0079	1918
Brazil	.0745	1919

"The motor freight truck, despite the rapid increase in the number of trucks operated within the past 10 years, is not as efficient a carrier of goods as it would be if the vehicles were operated as units of a coordinated transportation service. Trucks are operated through congested city streets between steamship piers, railroad freight stations, electric railway freight depots and industrial plants with only part of their capacity used.

"The only valid statement that can be made is that in general, the steam railroad, the electric railway and the steamship function under ordinary conditions more efficiently in long haul services while the motor is more efficient in shorter hauls especially in the terminals, between the terminals and the districts beyond the terminal boundaries.

"The twilight zone where the greater efficiency of the motor vehicle ends and the efficiency of other instrumentalities begins is an indefinite territory which must be determined by comparing the aggregate door-to-door transportation costs on each movement of traffic in the light of the circumstances surrounding each shipment."

ESPECIALLY interesting was the inspection trip held in connection with the Transportation Meeting. On Wednesday afternoon the conventionites visited both the maintenance plant of the Standard Oil Co., at East Cambridge, and the Massachusetts Institute of Technology.

An unusual feature at this year's meeting was a special 15-minute concert by a Victor Orthophonic preceding each of the technical sessions.

C. W. Bedford and Earnest Blaker, B. F. Goodrich Co., presented a paper containing the results of tests made on a Sprague dynamometer to determine the effect of brake drum heat on bus tires. In a large measure they found that results agreed rather closely with results obtained from actual road tests made by the Goodyear Tire & Rubber Co. early this year.

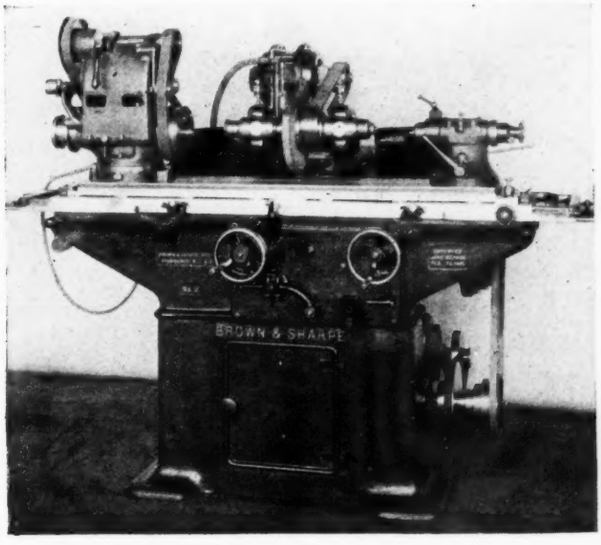
Forced Ventilation an Aid

Some of the conclusions reached are: "Cooling properties of a wheel increase with speed of rotation for a given brake energy output; variations in speed do not materially change relative cooling action of the three 20-in. wheels used in the test; forced ventilation by external fans is indicated as an aid for dissipating brake drum heat; tire trouble due to burned beads cannot result from heat due to tire flexing but must be attributed to brake drum heat; excessive flexing due to under inflation, heavy loading or high speed accentuates the effect of brake drum heat."

Motor-Driven Brown & Sharpe Universal Grinder

BROWN & SHARPE universal grinding machines, which are made in three sizes, are now available in the motor-driven form as completely self-contained and independent units.

Power for the headstock drive, for the wheel spindle drive, and for the table feed drive on each machine



Brown & Sharpe motor-driven universal grinder

is supplied by three individual electric motors. The three motors are controlled by a single push button switch located at the front of the machine near the controls and within immediate reach of the operator. "Burning out" of the motors through overloading is prevented by means of protective plugs located in the magnetic switch control box which is mounted on the base casting at the rear of the machine. Any motor not needed may be cut out by removing one of these protective plugs from this switch.

The methods of drive from the different motors are shown in the illustration. The work-driving motor is mounted on the headstock, and provisions are made for driving the work on either live or dead centers. The wheel-spindle driving motor is mounted on the wheel stand, which is bolted to its platen. Except when the internal grinding attachment is used, the drive is direct from the motor pulley to the spindle pulley. For internal grinding the drive is taken through a countershaft to the attachment mounted on the platen, which has been placed in the reverse position.

The motor providing the power for the automatic table travel and cross feed is located at the rear of the machine. It also drives the pump supplying water for wet grinding.

COMPLETE electrical equipments for automobiles originated in America about 1911 and were introduced in current production abroad only after the war. Hence the literature of the subject is most extensive in the English language. In fact, more books have been written in this country on electrical equipment than on any other part of the automobile. Abroad the situation is different, and books on the subject in German and French are as yet relatively rare. Today, however, all of the foreign cars of any pretension also have their electric starter, electric headlights and electric horns, and a great army of service men is required to keep these parts in repair. To supply these men with a good working knowledge of their vocation is the object of a book recently published by Wilhelm Knapp of Halle on the Saale, Germany, entitled Elektrische Zundung, Licht und Anlasser der Kraftfahrzeuge (Electric Ignition, Light and Starters of Motor Vehicles) by Dr.-Ing. E. Seiler. It is in general an elementary treatise on the subject designed for the service men, but is based chiefly on German designs and German experiences, and no doubt contains certain information which would interest the American engineer, particularly certain data in connection with ignition and with the historical phases of the subject.

ACCORDING to *Industrie und Handelszeitung* of Berlin, a company possessing extended mining rights in Rhodesia has made a contract with an aircraft corporation whereby the latter undertakes to prepare maps of the concession having an area of 52,000 sq. meters, which is believed to be particularly rich in copper and other mineral ores. This new method is being followed with great interest, because it may be applied to vast territories in the interior of Africa and Asia.

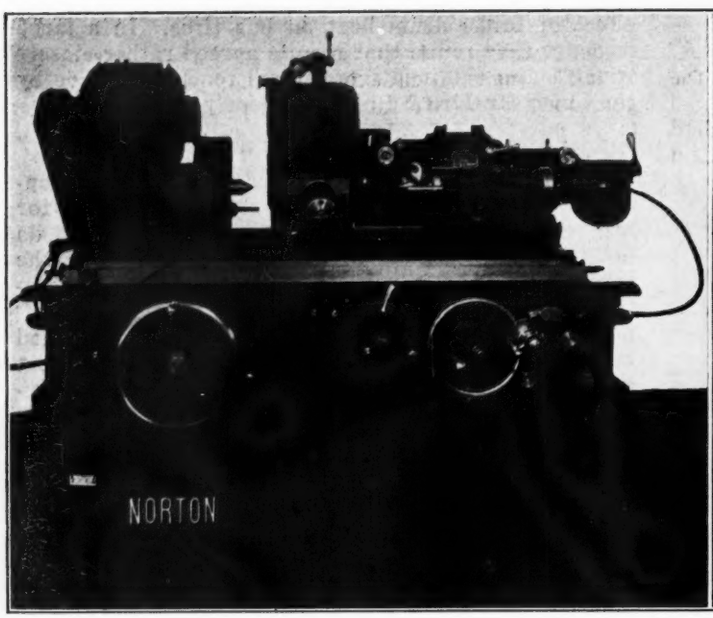


Fig. 1. New Type B semi-automatic Norton grinder

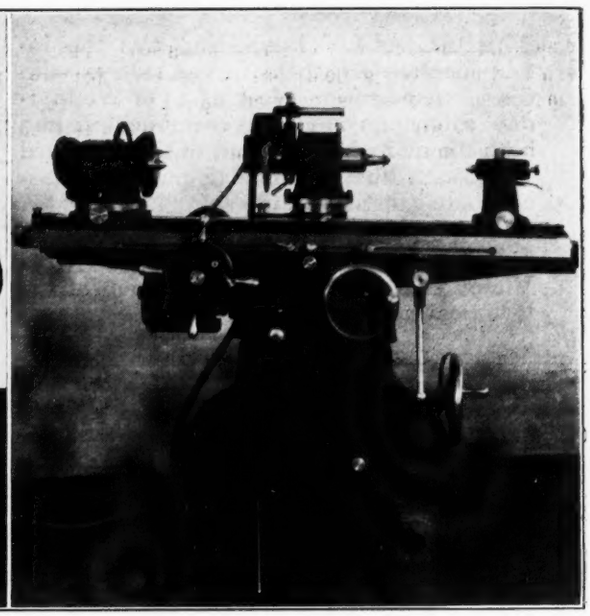


Fig. 3. Norton No. 2 motor-driven universal tool and cutter grinding machine

New Type B Semi-Automatic Grinder Introduced by Norton

Machine is designed to permit of cyclic operation. Company also announces electrification of No. 2 Universal.

A NEW type B, 12 x 18 in. grinder which has been introduced recently by the Norton Co. is semi-automatic and permits of cyclic operation. All of the features of the most recent type of infeed grinder have been retained and to these has been added a cam mechanism which automatically feeds the wheel into the work at a predetermined speed, then allows a momentary dwell to insure uniformity of size and finish, and finally retracts the wheel, stops the work rotation and turns off the water supply.

In conjunction with these automatic features, a treadle-operated pneumatic control of the steady rest and tailstock center facilitates both loading and operation.

As shown in Fig. 1, the new grinder bears close resemblance to the most recent type of hand-operated machine, due to the fact that the cam mechanism which is responsible for the semi-automatic features is built into the case. The major points of variation are the lever and chain shown at the right and behind the regular feed control wheel, the treadle near the base, and the pneumatic metal hose lines with the steady rest.

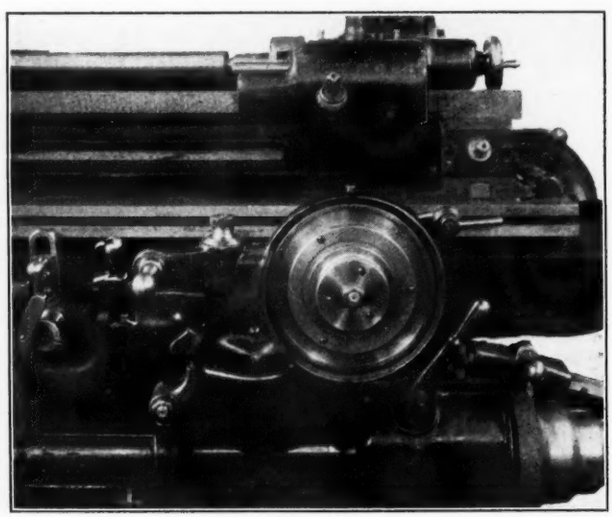


Fig. 2. Special type of feed and micrometric adjustment for Norton grinder

The entire scheme of operation is built around characteristic Norton infeed or wide-wheel grinding. Wheels of a maximum width of 9 in. are fed forward into the work, which can range up to 18 in. in length. The maximum swing is 12 in. While designed primarily for semi-automatic operation, all of the hand operation facilities are retained but are controlled by the new cam mechanism. As usual with the infeed type, a wheel oscillating mechanism at the wheel spindle prevents scoring of the work or grinding wheel.

In operation, the treadle is depressed to withdraw

the tailstock and open the pneumatic steady rest. The work is held between centers and the treadle is released, allowing the center and steady rest to return to the working positions. The shoe forming the steady rest proper is carried on a piston which is subjected to air pressure, so that the work is steadied in spite of eccentricity at the beginning of the cut and of the changing diameter during the cut.

Time of Cycle Can be Varied

Next the machine is started by the usual control lever at the left of the feed control. The wheel is advanced rapidly to the work and the water begins to flow. As the wheel approaches the work the rate of speed decreases to the working figure, which ranges from 0.060 in. per min. on the diameter down to as low as 0.003 in. per min., although the latter figure is somewhat special, 0.015 in. per min. being the ordinary low figure. By the use of change gears the time of the cycle can be varied from 14 min. to 10 sec.

When the wheel has advanced to produce the correct diameter of work, the cam control causes a slight dwell before going to the idle position, in which the headstock, water and wheel feed are stopped. Infeed of the wheel is controlled positively, thus tending to prevent glazing of the wheels. Because of this positive, uniform feed, softer wheels can be used for the same work with the new machine than with the hand-operated type of cylindrical grinder. Wheel wear is compensated for by the regular Norton micrometric adjustment on the index wheel.

Fig. 2 shows another type of feed and micrometric adjustment which is coming through the Norton shops. Quick change is effected by the large hand wheel at the right, while finer adjustments for wheel wear are made at the small dial at the top of the assembly. Quick changes in indexing are made by an internal gear tooth type of clutch which forms a part of the large hand wheel. As the grinding wheel advances into the work this entire assembly swings on a vertical axis in line with the small dial.

Another recent Norton development is the complete electrification of the universal tool and cutter grinder No. 2. An unusually clean appearance combined with greater adaptability have resulted from the application of three small motors. As the new machine is shown in Fig. 3, the first motor is concealed in the base and drives the wheel head through an endless belt which is enclosed in the column of the machine. This motor can be supplied for either alternating or direct current and where the latter is not available a small generator is connected in tandem in the base to provide current for the headstock and table feed drive motors.

As shown, the headstock drive motor is incorporated as a unit with the headstock assembly, while the table feed motor is located behind the bed in line with the hand traverse wheel and drives through a train of gears which supply power traverse in either direction. Hand traverse is obtained by a two-speed wheel or a lever for short strokes. Speed controllers for the table and headstock motors are located at each side of the base while the main motor switch is mounted on the door of the base. This cutter grinder is fully universal and can be set for tapers by a graduated scale. The sliding table is mounted on V and flat ways.

New Bus Furnished With Mechanical or Gas-Electric Drive

THE "acf" bus chassis, product of American Car & Foundry Motors Co., a subsidiary of the American Car & Foundry Co., is furnished with either mechanical or gas-electric drive, in single or double-deck models, and in five body styles.

The powerplant is a six-cylinder Hall-Scott, 4¼ by 5 in. motor. This engine develops 90 hp. at a governed speed of 1750 r.p.m. All valves, cams and governor mechanisms are located in the head so that a spare head can be interchanged quickly to take care of many service requirements.

General dimensions of the chassis are: Wheelbase, 230 in.; overall length, 357 in.; tread, front 70⅝ in., rear 78 in.; overall width, 96 in. A filter and condensing mechanism is installed in the lubricating line. The frame is of heat-treated steel with a maximum depth of 11 in. tapering to 6 in. at the ends. It is stepped up over the front axle and arched over the rear. Three pressed steel cross-members are provided in addition to tubular members at both ends of the rear springs.

Front springs are 49 by 4 in., while the rear ones are 64 by 5 in. Spring eyes are bushed for 1½ in. hardened and ground steel pins. The front axle is Timken I-beam type reinforced to withstand front wheel brake strains. The rear axle is also Timken and is of the underslung worm type. Westinghouse air brakes with steel shoes are standard on all models. On single-deck models they operate on rear wheels only with 16½ by 6 in. hardened steel drums. On the double-deck and gas-electric models four-wheel brakes of the same design are provided.

With the exception of the axles the chassis is lubri-

Single-deck "acf" bus

cated by the one-shot system. The axles are lubricated by Zerk system. Body framing consists of hardwood paneled with Plymetl. Leather upholstery is used with nickel trimmings. Standard equipment includes ventilation and heating devices, destination signs, bumpers, electric horn, buzzer signals, emergency stop signal, etc.

ALTHOUGH it formerly had been reported that the Spanish Government would purchase only Spanish made automobiles during 1927, a cable from Madrid states that motor vehicles and accessories are included in a list of articles which, under a Spanish royal decree, may be purchased abroad by the Government in 1927 without according preference bids to domestic producers.

Fox Multiple-Spindle, Heavy-Duty Drill Has Hydraulic Feed

Compactness a feature. Oilgear feed pump only unit not built into body. Drive may be by friction countershaft or motor.

A NEW multiple-spindle, heavy-duty drill with hydraulic feed has been announced by the Fox Machine Co., Jackson, Mich. One of the features of the machine is its compactness, the Oilgear feed pump being the only unit not built into the body.

The drive, which may be either from a friction countershaft or from a motor (as in the machine illustrated), is located at the rear of the column on the base. Drive from the motor is through an inclosed toothed chain. From the rear of the machine the drive is to the gearbox, which is located in the base of the column. This gearbox is assembled as a separate unit, and while it is firmly and accurately mounted in the machine, it can be removed readily when this is required. All of the gears within the box are made of heat-treated alloy steel and are supported on shafts carried in ball bearings. They form a sliding change-speed gear by which three changes of speed for the drill spindles are obtained.

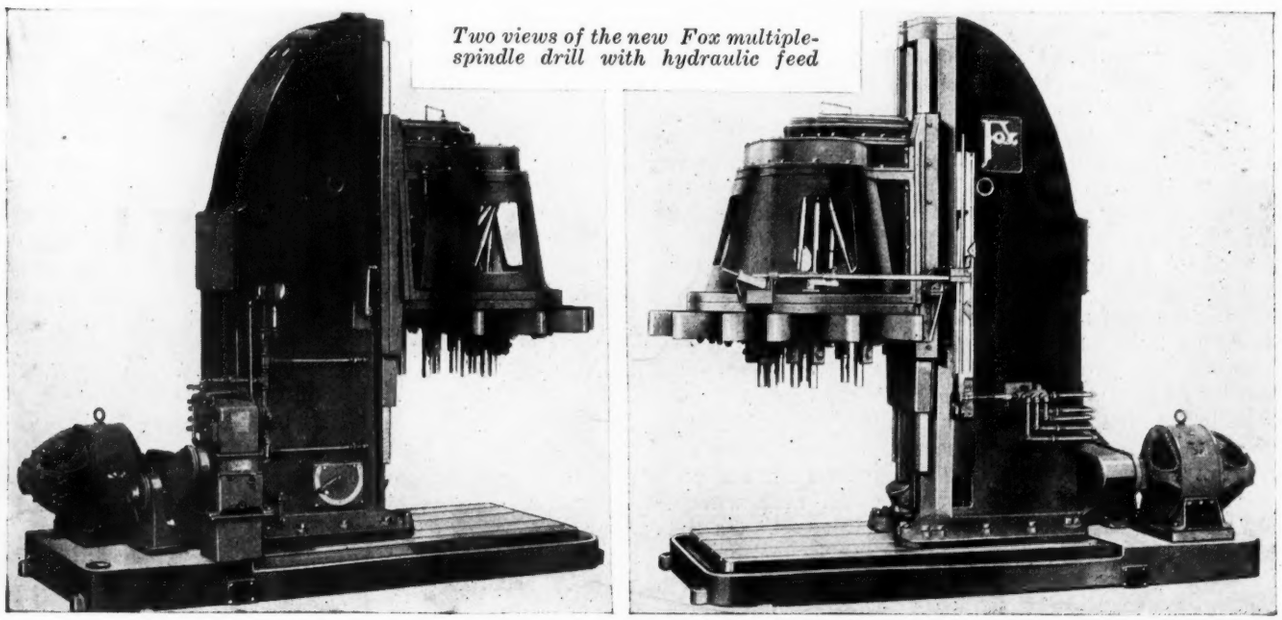
At the front of the gearbox is a set of spiral bevel gears which transmit motion from it to a vertical double-splined shaft without vertical movement, which is located in a recess in the face of the column and supported in a bearing at the top. A gear with splined bore is contained in the drilling head, and engages with the splines of the vertical shaft, thus maintaining the driving connection as the head moves up or down on the column ways. The drive from this vertical shaft to the drill spindle drive pinions is accomplished by means of ball bearing idlers.

The hydraulic feed cylinder is accessibly located in the column recess directly behind the vertical driveshaft. Sliding sheet metal covers for the column face make it readily accessible. While the column is regularly arranged to take a feed cylinder having a 12-in. stroke, provision is made for the mounting of a cylinder of 18-in. stroke if conditions should require it. The feed pipes carrying the oil to the cylinder are inserted through the side of the column, and the unions in these pipes are so located that they can be easily disconnected when the cylinder is to be removed.

The ram from the feed cylinder is cut with substantial square threads over a length of 24 in. With these threads engages a nut which is held from rotation by the head saddle. As the head feeds up and down, the upper end of the ram telescopes in a sleeve suspended from the column top cover. Ram and sleeve are keyed together. By turning a crank on the left side of the column the operator can rotate the sleeve, the motion being transmitted from the crank to the sleeve through miter gears and a chain within the column.

This special ram construction permits of adjusting the head to any desired range on the column for a particular job. The movement of the drilling head is the same as that of the hydraulic ram, viz., 12 in.

The Oilgear pump is driven by an inclosed toothed chain from the driveshaft at the rear. It is capable of producing rapid head travel in both directions, and a drilling feed that can be adjusted to any desired rate. Adjustable stops on the right side of the column limit the rapid head movement and the depth of drilling feed. A fine adjustment for drilling depth is pro-



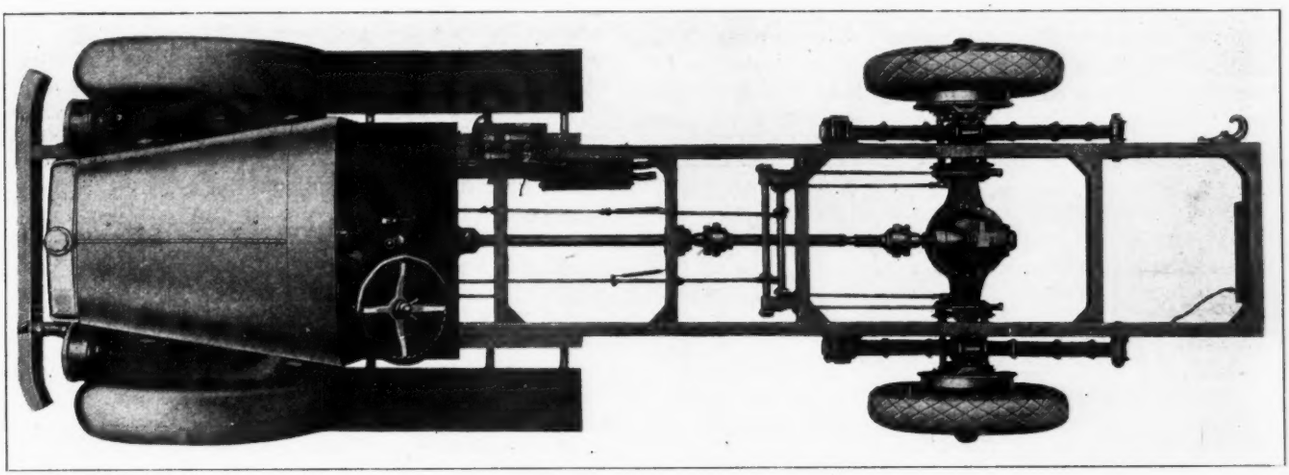
Two views of the new Fox multiple-spindle drill with hydraulic feed

vided and this is very useful for drilling blind holes.

The manual control for the feed is located at the right of the drilling head, forward. All the operator has to do is to move it to the position to secure rapid down travel, but he can also, by means of this same control, stop or reverse the head feed at any point of the cycle. To prevent accidents when adjusting spindles, drills or work, provision is made for locking the control handle in the neutral position.

In accordance with the usual practice, the drilling head and saddle are built as separate units. This permits of providing the saddle with an unusually long bearing on the column ways, giving the rigidity necessary for heavy drilling.

Drill spindles can be furnished with individual speed controls, including a neutral position, although for drilling at a high rate the single spindle speed is much preferable, according to the makers, because of the more rigid construction. Drilling head and spindles can be furnished in a variety of sizes.

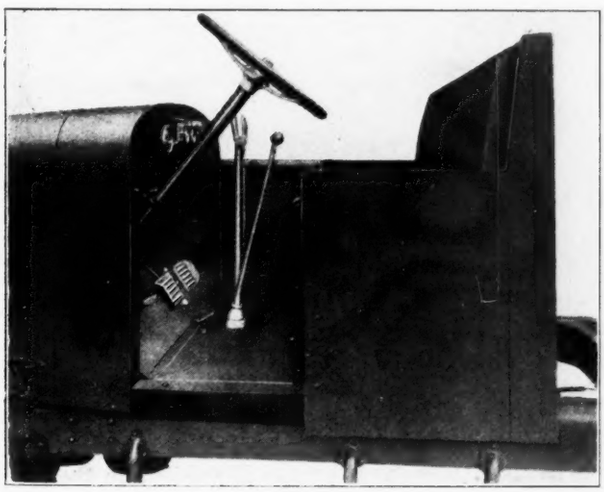


Plan view of Garford Model 30 1½-ton truck

Garford Announces New Four-Cylinder Light Truck

STREAMLINED hood and cowl design, a low hung chassis and a comfortable driver's compartment feature the new Model 30 Garford 1½ to 2-ton truck. This job is powered by a four-cylinder, 4 by 5¼-in. engine having an S.A.E. rating of 25.6 hp. The cylinder head is removable. Lubrication is by forced feed to all main bearings. A drop forged, alloy steel crankshaft, balanced statically and dynamically, is employed.

The cooling system comprises a continuous fin and tube type radiator, a fan assembly with V-belt drive, and a centrifugal water pump. Transmission and clutch are integral with the engine; the former has four speeds forward and one reverse. All transmission bearings are adjustable, and the gears are made of nickel steel. The multiple dry disk clutch has an Alemite connection on the left side of the transmission housing so that the clutch throw-out bearing can be greased properly.



Detail of driver compartment of new Garford truck

The rear axle is of the worm type. The rear springs are flat and when under load their arch is reversed, this arrangement being used to reduce the rebound. Seat and back cushions in the driver's compartment are deep and the seat back is set at an angle designed to give comfort on long trips. Ample leg room is provided and the controls are conveniently located. The 18 in. notched steering wheel, together with a screw and nut type gear, makes for easy steering. Long brake levers with straight rods are designed to increase the effectiveness of the brakes, of which there are two independent sets, both on the rear wheels.

Metal-spoke wheels, and pneumatic tires, 32 by 6 in. front and 34 by 7 in. rear, are standard.

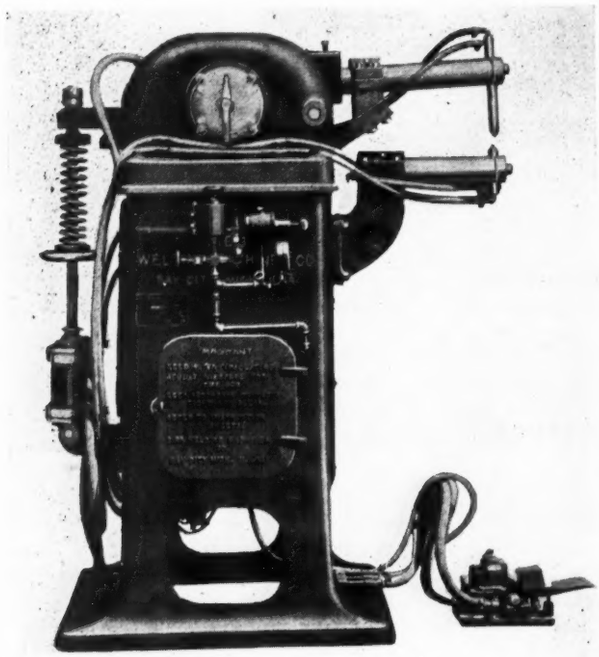
IT was stated on page 730 of the Oct. 28 issue that the oil reservoir of the Farmer lubricating system for passenger cars had a capacity of ½ pint. This should have read 1½ pint, the digit 1 being omitted through error.

ACCORDING to a report from Lisbon, import quotas for automobiles for the three months beginning Dec. 1 have been fixed as follows by the Portuguese Minister of Commerce: France, 58 cars and 42 chassis; United States, 90 cars and 30 chassis; England, 73 cars and 30 chassis; Germany, 100 cars and 40 chassis; Switzerland, 100 cars and 40 chassis.

NEW DEVELOPMENTS—Automotive

Air-Operated Spot Welder

ATTEMPTS to increase the speed of production with manually controlled spot welders are said to have given unsatisfactory results, because it is impossible in the case of high speed to accurately gage the time element, besides which the operator usually suffers from fatigue. To obtain uniform welds it is necessary to keep three factors constant, namely, heat, pressure and time. This result is claimed to be achieved by a new



Side view of Gibb air-operated spot welder

air-pressure operated high-speed spot welder brought out by the Gibb Welding Machines Company of Bay City, Mich., and illustrated herewith. The increase in production is said to range from 30 to 90 per cent. The machine is operated by pressing on the air valve, and girls can operate it without fatigue, it is claimed. An advantage in speed is gained on sheet metal of 18 gage and heavier, and it is for work on this class of material that the machine is specially recommended. On lighter material the only advantage of air operation is that it eliminates or reduces fatigue.

Improvements in Jig Borer

SEVERAL improvements have been made recently in the Pratt & Whitney jig borer to facilitate its operation. The belt pulley on the wheel spindle has been widened and the bracket for the idler pulleys at the back of the column has been made adjustable in a vertical direction, the fastening bolts passing through slots, which permits of ready adjustment of the belt tension.

The motor, while still in substantially the same position on the machine, is now placed on its side and mounted on a swinging base, which permits of adjustment of the motor belt by means of a screw adjustment on the base. Formerly the main drive of the machine was through a tight and loose pulley, but the need for this has now been eliminated by the provision of a larger friction clutch pulley. A cast-iron guard protects this pulley and is so arranged that it can be easily swung through an angle of 90 deg. to make the change from a countershaft to a motor drive or vice versa. A guard has been provided also for the friction clutch on the spindle pulley.

Changes Made in Profiler

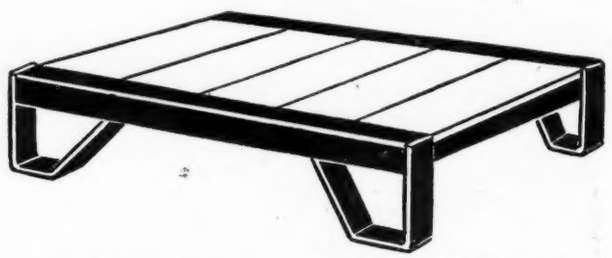
CERTAIN changes have been made recently in the Pratt & Whitney No. 12 profiler for special purposes. It is equipped with a longer and wider table, carrying much larger work. In addition, the two hand wheels which control the table traverse and spindle head traverse respectively, have both been brought around to the right hand side where they are more convenient for the operator.

These changes adopt the machine for profiling jobs which are light as regards the cuts but which require the extra amount of work surface.

Steel-Frame Lift Platform

A STEEL frame platform for use with lift trucks is the latest development of Lewis-Shepard Co., Boston. The platform has an all-steel, welded frame which completely surrounds the planks which form the platform proper. This construction protects the wooden parts from damage, particularly from the bumps of lift trucks as they are backed under the platform.

Steel legs are used on the four corners of the platform so that trucks may be backed under either side or end, thus permitting easier handling of loaded platforms in congested spaces. The steel frame is a com-



Lewis-Shepard all-steel welded frame platform for lift trucks

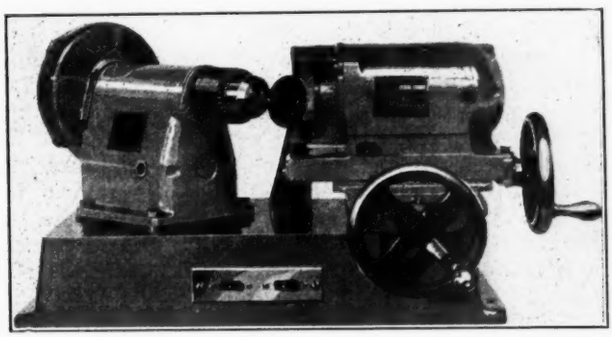
plete unit in itself and does not depend upon the wooden platform for strength or rigidity. The top of the platform is flat, as the steel frame is flush with the top of the planks, and the use of welding in the frame relieves the top of the platform of protruding bolt heads.

Parts, Accessories and Production Tools

Black & Decker Valve Refacer

A VALVE refacer which is equipped with universal motors has been introduced by Black & Decker Manufacturing Co., Towson, Md. One motor drives the grinding wheel and the other drives the work head and both motors can be operated on either D.C. or A.C. of 25 to 60 cycles.

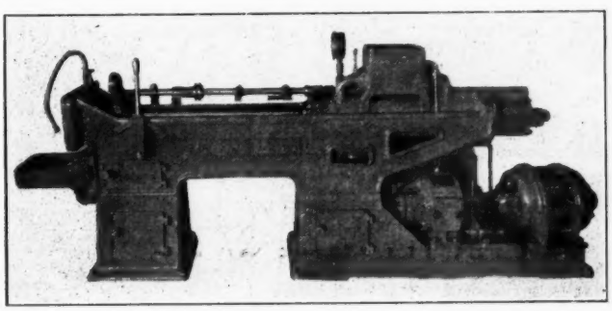
The work head of the refacer is permanently set at an angle of 45 deg. since most automotive engines have 45 deg. angle valves. By making the angle permanent



Black & Decker Model 45 electric valve refacer

it can not get out of adjustment. The grinding head is mounted on dove-tail slides with automatic spring take-up to compensate for wear. The chuck spindle carries a taper bearing with an automatic adjustment feature.

A diamond truing attachment is furnished as standard equipment and by use of this the face of the grinding stone always bears exactly the same angle as the refaced valve. Other items of equipment furnished as standard are: V-block attachment for grinding ends of valve stems, three-jaw refacer chuck, electric cable and attachment plug, and individual switches for motors which are built in the base.

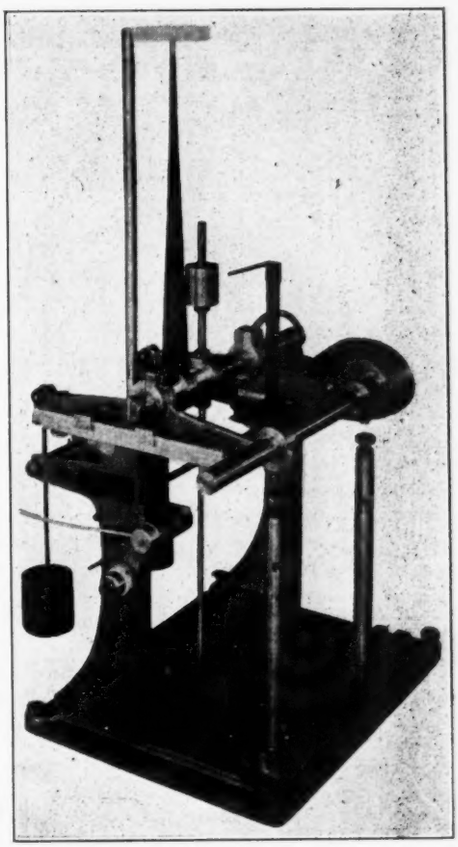


New Lapointe hydraulic drive broaching machine

Lapointe Hydraulic Broachers

A LITTLE over a year ago the J. N. Lapointe Co., New London, Conn., first placed on the market a broaching machine with hydraulically operated drawrod, and a description of this machine appeared in *Automotive Industries* of Oct. 1, 1925. Two smaller machines of the same general type have now been placed on the market, known respectively as the No. 2-S and the 2-L. The difference between the two models is that the 2-L has a longer stroke than the 2-S. These are said to be the smallest hydraulically operated broaching machines now manufactured and are believed to have a wide field. The photograph reproduced herewith illustrates both machines.

Both machines have a cylinder 5 in. in diameter and employ hydraulic pressures up to 1000 lb. per sq. in. While the 2-S has a stroke of 30 in. that of the 2-L is 48 in. The maximum cutting speed is 33 ft. p. m., while the return speed is variable from 10 to 180 ft. p. m. The hole in the face plate is 5 in. in diameter and the draw-head can be adjusted vertically 1⅝ in. above and below the center. A 5 hp. electric motor is recommended when electric drive is to be used, while for belt drive, the machine is fitted with a pulley of 16 in. diameter and 5 in. face, flanged. The recommended pump speed is 900 r. p. m. The weights of the two machines are 3500 and 4200 lb. respectively.



Static - balancing scale with motor drive

Balancing Scale With Motor Drive

AN improvement has been made recently in the Olsen-Lundgren automatic weighing balancing scale to increase its capacity for use in production work. This scale is being used for determining the direction and amount of static unbalance of such parts as flywheels, clutch members, etc. With the new scale, which is illustrated by the accompanying cut, the part to be balanced is mounted directly on the end of the shaft. This shaft has a speed of four revolutions per minute, and by revolving the part about two times the operator can secure all the necessary data as to the amount of unbalance and its angle or direction.

Low Loading Line a Feature of New Renault Buses for Paris

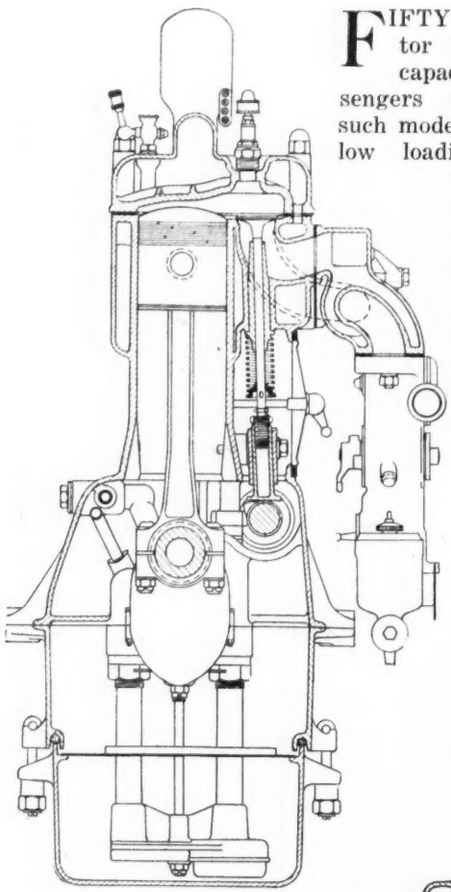
Vehicles of single-deck type with capacity of 40 passengers are built to design of Scemia. Four-wheel brakes with servo and oil purifier fitted. Four-cylinder, 45 hp. engine is used.

By W. F. Bradley

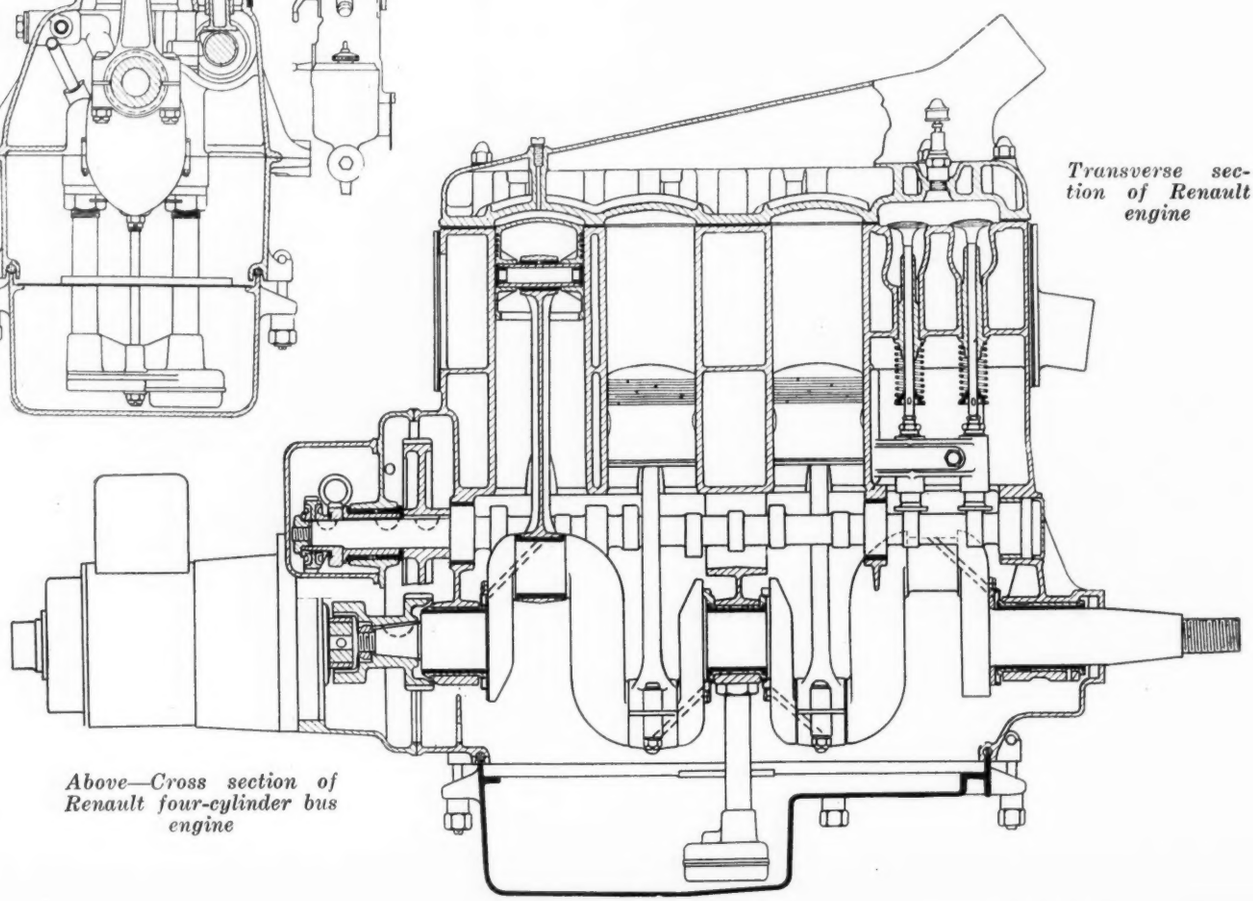
FIFTY single-deck motor buses, having a capacity of 40 passengers and embodying such modern features as a low loading line, four-wheel brakes applied through a mechanical servo and an oil purifier for the engine, are now being produced in the Renault shops in France and will go into service in Paris early next year. The design was furnished by the Scemia Co.

The new design gives a rear platform having a height of only 14½ in. The side rails have a height of 7.48 in., are upswept over the two axles and have a drop for the rear platform. With a wheelbase of 172 in., the rear overhang is 101 in. and the forward overhang 39 in., giving a total length of 312 in. Under load, the height from the ground to the top of the side rail is 21.6 in.; the clearance under the rear axle is 7.8 in.; the height to the top of the rear axle housing is 19.7 in., and the height of the floor of the bus is 24 in. compared with 33½ in. for the present models in use in Paris.

A Renault four-cylinder engine of 100 by 160 mm. bore and stroke (3.9 by 6.29 in.) is employed on the

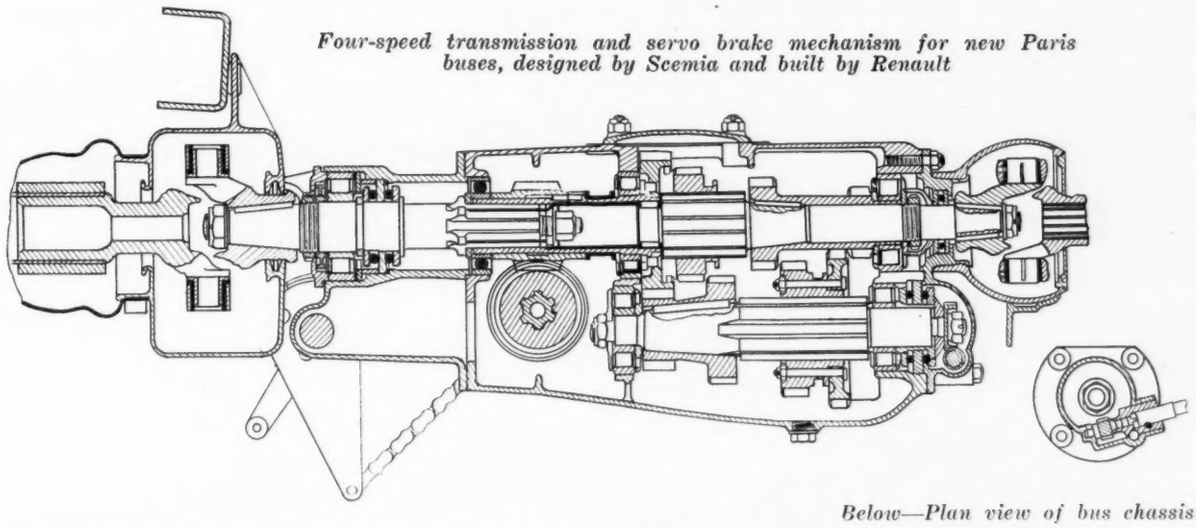


Transverse section of Renault engine



Above—Cross section of Renault four-cylinder bus engine

Four-speed transmission and servo brake mechanism for new Paris buses, designed by Scemia and built by Renault



new bus. It is of the L-head type, with the shape of the head designed to produce turbulence. The cylinders and upper half of crankcase constitute one casting. Pistons are aluminum, connecting rods are I-section forgings, and the lubrication system is by pressure to the three main bearings and by centrifugal force to the connecting rods, with the use of a centrifugal purifier.

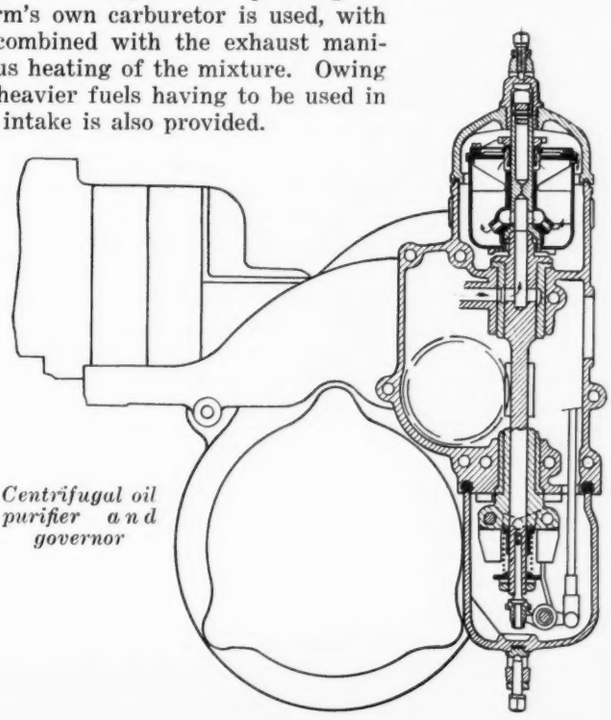
The entire oil supply is contained in an aluminum pan which can be dismounted by hinged bolts without interfering with the bearings. One of the reasons for a detachable turbulence-type head is that fuels other than gasoline may have to be used. It is quite possible that charcoal gas may be adopted or experimented with, and the higher compression ratio necessary for this will be secured by changing the head.

The engine is designed to develop its maximum of 45 hp. at 1500 r.p.m. Minimum fuel consumption is obtained at 1000 r.p.m., with an output of 30 hp.

Renault's general line of construction has been followed in the use of a front transverse shaft for driving the magneto. The centrifugal oil purifier is driven off this shaft, as well as the governor operating on the throttle. The firm's own carburetor is used, with an intake manifold combined with the exhaust manifold to assure vigorous heating of the mixture. Owing to the possibility of heavier fuels having to be used in the future, a hot air intake is also provided.

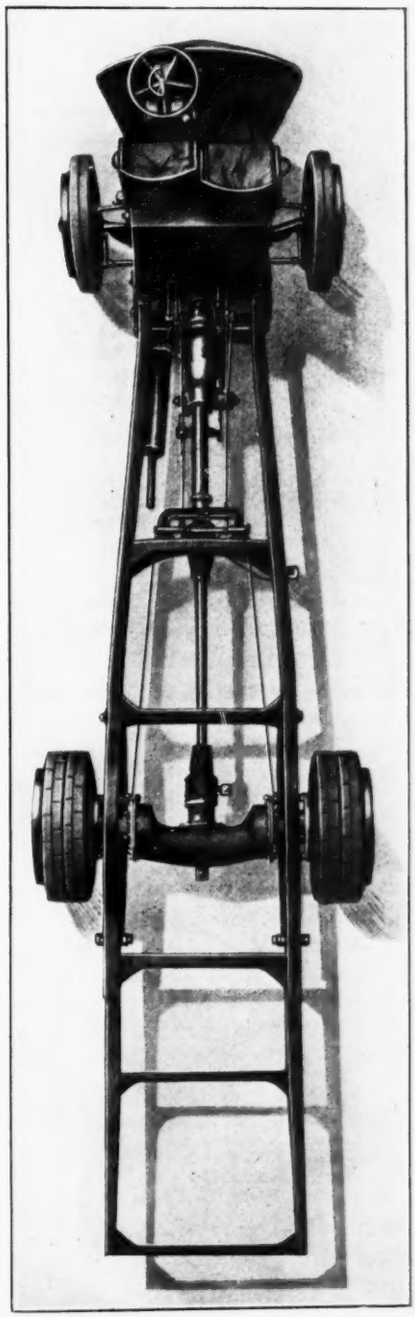
Water circulation is by thermo-syphon, with the radiator on the side of the driver's cab, which latter is above the engine. Steering is left hand, with central control. The fuel tank is on the dashboard. A single unit electric generator and starting motor is used, its position being on the front end of the crankshaft. When used as a starting motor a set of planetary reducing gears is brought into operation.

The method of transmitting the drive from the engine to the rear axle follows the same general lines as on Renault's trucks and passenger cars, modified, of course, by reason of the greater length. The transmission, giving four combinations ahead and reverse, has combined with it a



Centrifugal oil purifier and governor

Below—Plan view of bus chassis

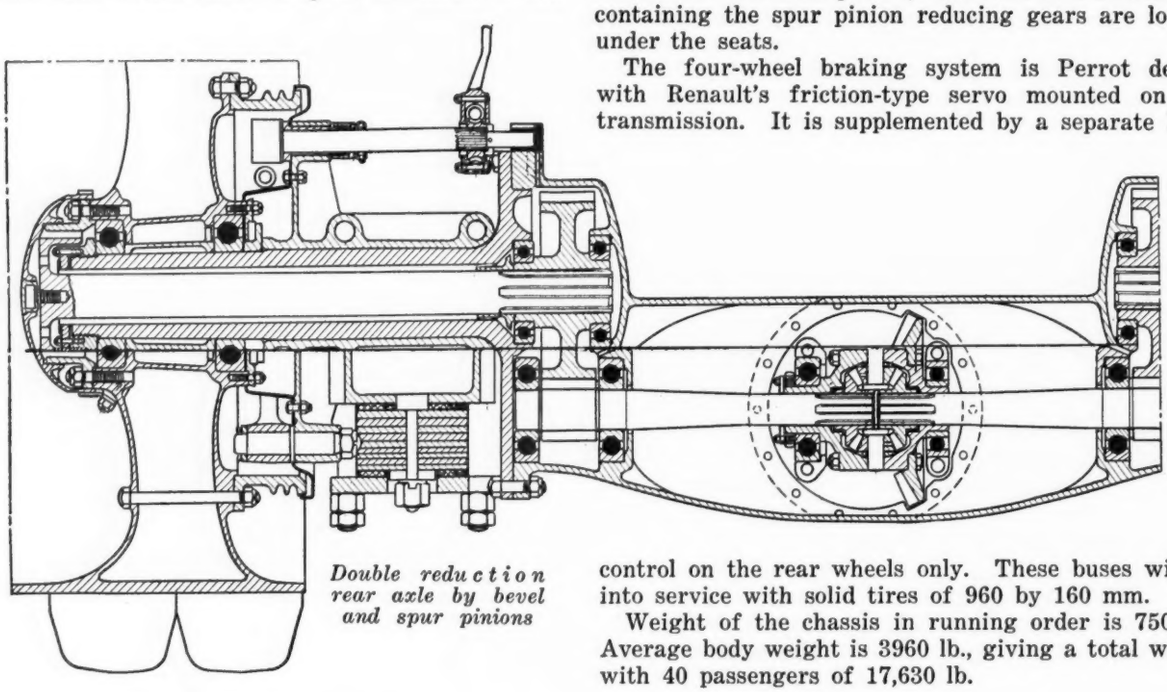


tube containing the driveshaft and is carried on three points. At the front is a big diameter sphere, received in a female member on a chassis cross-frame member and at the rear is a fork with its two arms pivoted to another cross-frame member. From this point the drive is taken to the rear axle by a double universal jointed shaft.

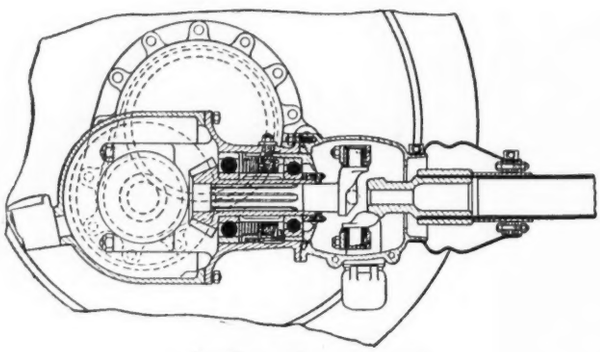
One of the outstanding features of this chassis is the rear axle construction adopted to secure a low loading line. The central housing is a steel casting having the shape of an elongated U, to the ends of which two short pressed steel axle casings are bolted. The differential gear and the straight bevel drive are contained in the center of the U-shaped housing, while in the vertical branches of this casting there is a further reduction by means of a pair of spur pinions, the drive pinion being on the differential shaft and the driven pinion on the axle shaft immediately above it. As the center of the housing is slightly less than 20 in. from the ground, the central portion of the floor of the bus can be kept low, while the two extremities containing the spur pinion reducing gears are lodged under the seats.

The four-wheel braking system is Perrot design with Renault's friction-type servo mounted on the transmission. It is supplemented by a separate hand control on the rear wheels only. These buses will go into service with solid tires of 960 by 160 mm.

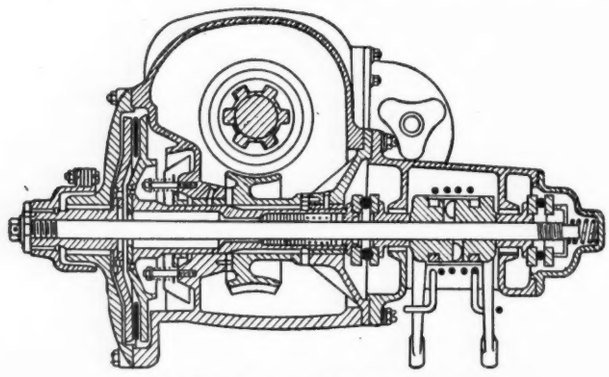
Weight of the chassis in running order is 7500 lb. Average body weight is 3960 lb., giving a total weight with 40 passengers of 17,630 lb.



Double reduction rear axle by bevel and spur pinions



Another view of rear axle



Detail of servo brake mechanism

"Hamlet" Airplane Characteristics

THE Handley-Paige "Hamlet" which was mentioned in the Oct. 21 issue of *Automotive Industries* as being under construction is now undergoing its flight tests. This new development of the Handley-Paige Company embodies two departures from conventional design. As far as we can ascertain, it is the first monoplane built for commercial transportation having as its powerplant three engines of low horsepower. The second unusual feature is the embodying of slotted wings in its design. Although slotted wings as such have existed for a long time, the "Hamlet" represents the first British commercial machine to use them.

Undoubtedly the efficiency of the Hamlet with its three engines of low horsepower (Bristol Lucifer engines being used) will not be as good as could have been achieved with a single engine of higher horsepower. The plane should be applicable, however, to service on lines where safety and reliability are the prime requisites and where a slight decrease of efficiency with a corresponding increase in reliability is desirable.

Following are the major characteristics of the "Hamlet":

Area of main plane including flaps	388 sq. ft.
Overall length	34 ft. 10 in.
Span	52 ft.
Aerofoil section	R. A. F. 31
Engines	Three 120 hp. Bristol Lucifers
Landing gear	Divided axle type
Seating capacity	6
Total loaded weight	5000 lb. (estimated)

EDITORIAL

The Increase in Repossessions

REPOSSESSIONS of new cars sold on so-called standard terms—33 1/3 per cent down and the balance in 12 months—were 18 per cent higher in 1926 than in 1925, according to the figures presented by C. C. Hanch at the meeting of the National Association of Finance Companies last week. Repossessions of used cars sold on standard terms—40 per cent down and the balance in 12 months—went up 41 per cent during the present year.

These figures emphasize the fact that, despite a number of years of experience in instalment buying, the exact relations between terms and safety are not yet fully established. They emphasize also that down payments and terms alone are only two of many factors which go to make up a safe risk. Business written on standard terms is not made safe thereby automatically.

The increase in repossessions of used cars sold on the basis of 40 per cent down and the balance in 12 instalments is particularly significant when considered in connection with the far more liberal terms upon which many used cars are being sold by dealers. On the show window of the establishment of a dealer for one good-selling, standard, middle-priced line in a certain city, for example, appears a banner stating "Any used car sold for 10 per cent down"; and the dealer for an equally important line advertises "Any used car in the place for $25 down."

If repossessions of used cars sold on standard terms now amount to 4.27 per cent, as indicated by Mr. Hanch's survey, it is reasonable to suppose that the repossession ratio is very much higher in those cases where terms are much more lax. In these latter cases, moreover, the dealers and not the finance companies are bearing the financial burden.

Thanksgiving

THE automobile industry can sit down to its Thanksgiving dinner this year with a genuine feeling of thanks for the bountiful harvest it has reaped. As it tucks its napkin under its chin and poises its fork over the browned carcass of the national Thanksgiving bird it can reflect on many things which should be conducive to a jovial spirit and good digestion. Business has never been so good as in 1926. New production and sales records have been established and earnings in most cases have increased proportionately. Some companies, it is true, have shown smaller profits per car sold this year than last, but they have been making money nevertheless. When the final figures for the year are in it is almost certain that earnings for the industry as a whole will exceed those of 1925. General Motors alone will show a gain of nearly 100 per cent.

The industry during the year has further improved its position as regards stability of operations. There has been no violent fluctuation either in prices or production. This has led to a feeling of greater security which is reflected through the rank and file of the industry itself and in financial and investment circles.

There is no longer any question that car and truck production for the calendar year will run well ahead of 1925. After a short lull, factories may soon be expected to step up production again in anticipation of renewed buying interest on the part of the public during the coming months. Dealers' stocks are within reasonably safe limits. The general business outlook is good and will be excellent if the South can find a way of handling its bumper cotton crop without a loss.

Automobile Fatalities

IN spite of all the measures which have been taken by automotive manufacturers, by police authorities, by safety officials and others to decrease the accident hazard of motor vehicle traffic, the number of lives lost in automobile accidents continues to increase. Every year since 1906 deaths from this cause have increased until in 1925 the total of 21,627 was reached.

During the last 20 years nearly 165,000 persons have died in automobile accidents and if the present fatality rate remains the same and the population of the country grows as it has since 1920 the total deaths during the next two decades will be about 520,000.

This is, most certainly, a serious condition. Although it has received a vast amount of attention in the past, it is evident that much still needs to be done. Suggested remedies are numerous and include more rigid examination of car drivers, greater penalties for accidents of any nature with revocation of licenses for repeated offenses, better control of traffic and similar means. Whether any of these would improve conditions is uncertain but, in the present grave circumstances, nothing should be left undone which holds a promise of relief.

One encouraging fact about the situation is that failure of automotive equipment causes almost none of these fatal accidents. With only ordinary care, steering gears, brakes and other parts of modern automobiles fulfill their functions reliably and, when the car is operated with reasonable intelligence, protect the occupants from all danger except that arising from other vehicles operated by less careful drivers.

AUTOMOTIVE NEWS SECTION INDUSTRIES

Philadelphia, Pennsylvania

Thursday, November 25, 1926

Production Continues Low as Retail Buying Slackens

PHILADELPHIA, Nov. 25—As several large automobile manufacturers are scheduled to take inventory and others to make plant changes of one kind or the other between now and the first of the year, production is likely to be lower. This is the time of year when factories are being made ready for the new year in merchandising of automotive products.

Sales are seasonally slack in most parts of the country. Southern demand, which to a slight extent supports the winter market for motor vehicles, is below par just now, a condition which was generally expected.

Despite the elimination during the year of two or three car manufacturers, more different lines of cars are to be on the market next year than this. Besides the addition of products in various price classes to give dealers a rounded line, there will be more color combinations available, to meet what is probably the strongest element in popular demand.

These additions and the diversification of color have increased manufacturing costs and contributed in some instances to the lower margin of profit revealed in earnings statements.

Dealers' stocks of new cars and probably also of used cars are higher than a year ago at this time, but so far as new cars are concerned the condition is partly explained by the greater number of lines and body models now carried. Repossessions of cars sold on time have gained this year over last by 5.1 per cent to 41 per cent, according to the kind of paper and whether new or used cars were financed.

National Accounts Rouse Tire Dealers

MEMPHIS, Nov. 22—A plea for closer relations between tire manufacturers and dealers was made at the annual convention here last week of the National Tire Dealers Association, which requested the Rubber Association of America, Inc., to maintain a field department to report on matters causing difficulties to dealers.

The abuse of national accounts and the prevailing methods of handling motor bus tire sales were two subjects discussed at length by both the truck tire division and the convention proper. As the first step in these negotiations, the convention adopted a resolution calling upon the Rubber Association to announce a concrete definition of the term "national account." The Rubber Association also was requested to call upon its members to keep the existing list of national accounts within reasonable confines.

October Production Shows 349,408 Total

Both U. S. and Canadian Factories Register Decline in Passenger Cars

WASHINGTON, Nov. 23—Total production of automobiles and trucks in the United States and Canada for the first 10 months of the year was brought to 4,026,843 with the addition of the October figures. This compares with a total of 3,638,159 for the first 10 months of 1925 and with 4,336,271, the total for the full year 1925. The October total was 349,408, which compares with 414,836 in September, and with 454,030 in October, 1925.

A total production of 309,428 is necessary in November and December to equal the 1925 total.

The passenger car total in October was 299,443, of which 288,848 were built in the United States factories and 10,595 in Canadian. The United States total represents a decline of 62,065 from the September total and a drop of 105,248 from the October, 1925, total, which was the banner total that year. The Canadian total is a decline of 2029 from September and of 3326 from October last year.

The truck total in October was 49,965 of which 42,890 were built in the United States and 7075 in Canada. The United States total is a decline of 3538 from the September total and of 1433 from October last year. The Canadian truck output represented a gain of 2204 over September and of 5385 over October, 1925.

Committee Buys in Murray

DETROIT, Nov. 24—J. H. Harding and Casimir I. Stralem, representing reorganization committee, bid in the Murray Body Corp. assets for $5,000,000 at the receivership sale held at the main factory here today. The sale is subject to confirmation in Federal district court.

1926 PRODUCTION CLEARS 4,000,000

WASHINGTON, Nov. 23—Production totals of automobiles and trucks by months for 1925 and the first 10 months of 1926 are as follows:

	Cars	Trucks	Total
1925			
Jan.	213,851	28,203	242,054
Feb.	253,955	34,482	288,437
March	334,214	45,180	379,394
April	393,262	47,984	441,246
May	384,548	45,719	430,267
June	366,510	38,151	404,661
July	360,124	41,870	401,994
Aug.	223,517	37,850	261,367
Sept.	274,227	60,482	334,709
Oct.	408,017	46,013	454,030
Total	3,212,225	425,934	3,638,159
Nov.	337,435	40,048	377,483
Dec.	286,141	34,488	320,629
Total	3,835,801	500,470	4,336,271
1926			
Jan.	284,703	33,461	318,164
Feb.	334,524	41,685	376,209
March	399,105	49,233	448,338
April	401,836	53,887	455,723
May	394,569	51,343	445,912
June	358,365	47,070	405,435
July	329,950	41,921	371,871
Aug.	393,040	47,907	440,947
Sept.	363,537	51,299	414,836
Oct.	299,443	49,965	349,408
Total	3,559,072	467,771	4,026,843

Car Exports Reach 7.3% of 1926 Total

WASHINGTON, Nov. 23—Total exports from the United States during the fiscal year ending June 30, this year aggregated $4,754,000,000, of which $349,215,316 or 7.3 per cent were accounted for by automotive and accessory exports according to the annual report of the Bureau of Foreign and Domestic Commerce just made to the President.

Comparing the figures with the fiscal year ending June 30, 1922, the total exports were $3,771,000,000, of which $86,622,298, or 2.3 per cent were automobiles, trucks or accessories. The increase in exports of 1926, compared with 1922, was 26 per cent against an increase during the same period of automotive exports of 316 per cent.

Total imports in 1926 were $1,906,000,000 of which the largest item was rubber, representing about $300,000,000 due to increased prices. Imports in 1922 were $927,000,000.

Service Promotion Plans on Big Scale

Widest Possible Interest in Shop Equipment Displays Sought by Association

NEW YORK, Nov. 23—Plans for obtaining the completest possible trade participation in the shop equipment exhibits at the New York and Chicago national automobile shows were revealed here today at a luncheon to the trade press given by Sam A. Miles, show manager of the National Automobile Chamber of Commerce.

Approximately 20,000 car dealers and service men in both the New York and Chicago areas are being invited to attend the trade sessions through the use of credentials issued only to the trade. Maintenance machinery will be shown in operation and under conditions designed to give service department managers the best idea of the uses to which the equipment is put.

Local jobbers' committees have been appointed in New York and Chicago and will meet in both cities for the discussion of plans Dec. 2. It is desired not only to have the jobbers aid in the exhibits, but to bring their customers in large numbers. Advertising in the trade journals also will be used to stimulate interest.

The N. A. C. C. has secured the help of factory service managers, who are sending bulletins on the subject to distributors' and dealers' service managers. There is also a tie-up with the meetings of the National Automobile Dealers Association in New York and Chicago.

It was suggested at the meeting by A. V. Comings, editor of the Automobile Trade Journal, that distributors hold clinics at the shows for the service managers of their dealers, during periods when few visitors would be present.

Neal G. Adair, manager of the show and educational departments of the Motor and Accessory Manufacturers Association, is actively promoting trade attendance at the shows.

Car & Foundry Says Bus Position Fixed

NEW YORK, Nov. 23—The position of the American Car & Foundry Co., for many years manufacturer of equipment for railroads, in the truck and bus industry is set forth in the first issue of a house organ, entitled "News Regarding Transportation," which has just made its appearance.

"While bus transportation within the United States, whether intercity or interstate, was regarded as competitive by the railroads, which have always been the best customers of the American Car & Foundry Co., it was plain that it would have been both unethical and unpolitic for the American Car & Foundry Co. to have taken part in this competition," the News says.

"But the time has now come when the American railroads realize that motor bus transportation acts as a feeder to their systems, reaching outlying territories in which it would not be profitable to lay rails or to maintain existing rails; and so, instead of forcing their long-time customers, the railroads, to look elsewhere for bus equipment, the American Car & Foundry Co. determined to supply them with the best buses that could possibly be manufactured."

M.A.M.A. Report Shows Trade Dull

NEW YORK, Nov. 23—Sales of automotive replacement parts, accessories, shop equipment and tools declined in November, continuing the recession of October, according to the Motor and Accessory Manufacturers Association. October business was somewhat ahead of September but was under that of October last year, on the basis of reports received from automobile equipment wholesalers in various parts of the United States and Canada.

The M. & A. M. A. general index figure for October, on the basis of 100 for January, 1925, was 123 as compared with 147 for September, 152 for August and 133 for July.

The parts and accessories figure covering October original equipment stood at 125, which was the lowest this year, comparing with 151 for September, 157 for August and 135 for July.

The replacement parts index was 116 for October, comparing with 120 for September, 120 for August and 117 for July.

Accessory shipments stood at 109 for October as compared with 126 for September, 131 for August and 127 for July.

Shop equipment and tools was 145, comparing with 165 for September, 166 in August and 142 for July.

The general impression in the trade was that the quiet period would continue until around the first of the year, when the national automobile shows and other trade activities would stimulate business.

Hayes Income $318,193

JACKSON, Nov. 24—Hayes Wheel Co. reports net income of $318,193 after interest and Federal taxes for the nine months ended Sept. 30. This is equal after preferred dividends to $1.17 a share earned on the 197,044 shares of no par common stock. This compares with $373,625 in the third quarter last year of $1.74 a share on common.

Watson Gets Gold Medal

PHILADELPHIA, Nov. 23—The John Warren Watson Co. has been awarded the gold medal of the Sesqui-Centennial Exposition for Watson stabilators in the class of car spring control equipment.

Business in Brief

Written exclusively for* AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.

NEW YORK, Nov. 25—Current trends in industry and trade continue irregular, with business as a whole continuing at a remarkably high level. The advent of cold weather last week stimulated sales in a number of important lines. The level of commodity prices declined rather sharply, while stock prices continued to move upward.

FREIGHT CAR LOADINGS

Car loadings in the week ended Nov. 6 (a holiday week) numbered 1,137,210, as compared with 1,216,432 in the preceding week and 1,062,646 in the same period last year. Loadings for the year to date total 46,395,123 cars, as against 44,492,749 cars a year ago and 42,152,653 cars two years ago.

PETROLEUM PRODUCTION

A decline was reported in crude petroleum production for the week ended Nov. 13, with an average daily output of 2,343,850 bbl., which compares with 2,357,050 bbl. a week earlier and 2,039,100 bbl. in the second week of November last year.

BANK DEBITS

Bank debits to individual accounts reported to the Federal Reserve Board for the week ended Nov. 17 were 3.2 per cent larger than the total for the preceding week but 11.6 per cent below that of a year ago.

FISHER'S INDEX

Fisher's index of wholesale commodity prices stood at 149.2 last week, as against 152.9 a week earlier and 148.4 four weeks earlier. The monthly wholesale price index of the Bureau of Labor Statistics declined from 150.5 in September to 149.7 in October.

FEDERAL RESERVE STATEMENT

Bills and securities held by the Federal Reserve banks increased $1.400,000 during the week ended Nov. 17, a decrease of $14,400,000 in discounts, being slightly more than offset by gains of $8,000,000 in open market purchases and $7,800,000 in holdings of Government securities. Note circulation declined $500,000, while deposits increased $36,300,000 and reserves $14,800,000.

During the same period, loans of reporting member banks declined $24,000,000, with decreases of $45,-000,000 in loans secured by stocks and bonds and $2,000,000 in loans secured by Government obligations only partially offset by a gain of $23,000,000 in "all other" loans. Investments declined $1,000,000, while borrowings from the Federal Reserve banks increased $9,000,000 and net demand deposits $23,000,000. Loans to brokers and dealers, secured by stocks and bonds, made by reporting member banks in New York increased $6,000,000.

Nichols Says Car Ready for 1927 Sale

Drive for Dealers Starts Under F. H. Akers—All Stock Fully Subscribed

DETROIT, Nov. 22—The premier showing of the new six-cylinder Knight motored automobile to sell in the $1000 class, and which will be manufactured by a new company being organized in Detroit, will be an event of March or April, in the opinion of John A. Nichols, Jr., who will be president of the corporation. The name Wayne Motor Car Co., by which the new company has been called, is not official.

R. N. Harger will be vice-president of the new organization. As general sales manager the company has selected F. H. Akers, who has resigned his post as assistant director of sales of the Chrysler Corp. Before joining Chrysler Mr. Akers was director of districts for Dodge Brothers, Inc. In his first official statement on the plans of the new company Mr. Nichols said:

"For years Knight motored automobiles in the high priced ranges have distinguished themselves and there is a growing belief on the part of many car owners that a Knight motored car in the lower price class would suit their needs. We are satisfied that the time has arrived when there is a large group of potential buyers who are eager for such a car at a popular price and we are introducing a product which we are confident will fill this demand.

Can Buy Advantageously

"Through advantageous arrangements the company will be in a position to buy its materials and such units as purchased, at the lowest possible price because it will be able to get quotations from various connections based upon their tremendous production and upon our large potential possibilities.

"There will be no stock selling campaign in connection with the organization of this company. All the stock is already subscribed and paid for. As soon as we can complete our incorporation papers they will be filed, most likely under the laws of Michigan."

In reply to questions on how the company will recruit a dealer organization, it was said that organization work will be started immediately so as to have a full representation in the field for the introduction of the car in the spring. The company, said Mr. Nichols, will not demand exclusive contracts.

"Years of experience in the motor car business have confirmed the judgment that to be permanently successful, a manufacturer must have a product that is of consistent high quality and public appeal and a dealer organization that is happy. On this definite foundation all policies of this company will be built," he said.

During the time Mr. Nichols was at Dodge Brothers, two outstanding policies were put into force. The first was the idea of installing a uniform accounting system in all the dealerships. The second was the establishment of the factory used car department.

John A. Nichols, Jr.

Nichols Former Newspaper Man

A brief outline of Mr. Nichols' automotive career shows him resigning the newspaper business to go with Franklin. For two years he was in the Pacific territory and then was named superintendent of branch houses. Franklin then sent him out to the Northwest as sales manager and he remained there until 1914 when he joined Dodge Brothers, Inc., then just organizing to manufacture automobiles.

Until 1920 he was the Seattle representative for Dodge Brothers, when he was named New York district representative. In 1922 he was called into the factory as general sales manager, a post he held until 1925, when he was elected vice-president. He resigned early this year.

Petroleum Institute to Study Oil Future

NEW YORK, Nov. 22—"Motor Gasoline of the Future" will be discussed by T. A. Boyd of the General Motors Research Corp. at the annual meeting of the American Petroleum Institute at Tulsa, Okla., Dec. 7, 8 and 9.

Mr. Boyd was one of the investigators who developed the possibilities of increasing the efficiency of gasoline by the tetraethyl lead treatment.

The convention will bring together from 1500 to 2000 corporation heads, technical experts, scientific authorities, state and national officers, economists and engineers, who will consider in the broadest way questions relating to the permanency of the present petroleum supply.

Stettinius Named New N.S.P.A. Head

Convention and Show Draw Large Attendance—Speaker Shows Sales Needs

CHICAGO, Nov. 20.—The convention and show of the National Standard Parts Association, which closed this week, drew manufacturers and jobbers from all over the United States. Reports on membership showed 97 members were added during the last year, making a total of 221, which includes 112 jobbers and 109 manufacturers.

Officers for the ensuing year were elected as follows: President, W. C. Stettinius, of the American Hammered Piston Ring Co.; vice-president, W. T. Mills, Auto Parts Co., St. Louis; manufacturer directors, C. M. Burgess, Burgess-Norton Mfg. Co., Oscar X. Buehler, Indianapolis Tool & Mfg. Co., and F. J. Glennon, Kant-Skore Piston Co.

The various sessions of the show were well attended and afforded manufacturers opportunity of making jobbers better acquainted with parts, tools and the factors that affect their use. On Thursday night the show was thrown open to dealers as well as jobbers and manufacturers.

Referring to problems in the industry, W. T. Mills pointed out three conditions in the distribution of automotive parts, attention to which would result in improvement, he said. His first point was that there are too many jobbers for available business. The second was that some manufacturers select new jobbers to handle certain lines without consulting the jobber organizations already covering the territory. The third, that manufacturers' salesmen could assist greatly in the moving of parts by assisting jobbers to sell merchandise.

Chevrolet Opens in Salt Lake

SALT LAKE CITY, Nov. 16.—Chevrolet Motor Co. has opened local factory offices in the Continental Bank Building. This office will operate as an associate zone branch under the Denver factory branch, and will handle the wholesale activities of the factory for Utah, southern Idaho and western Wyoming. C. B. Spraker will have charge of the new branch and will have D. G. Packer, Jr., as special sales and service promotion manager.

Fisher Plants Expanded

ST. LOUIS, Nov. 22.—Expansion of Fisher body plants in other cities will make it possible to turn over the full production of the St. Louis Fisher plant to the local Chevrolet assembling organization. There are 2600 workmen employed at present by the Chevrolet and Fisher body plants here and it is expected that several hundred more will be added next spring.

New Tool Combine Selects Executives

Whitman Barnes-Detroit Personnel Includes Officers of Former Companies

DETROIT, Nov. 22—Officers and directors of the new Whitman Barnes-Detroit Corp., formed as the result of the merger of the Whitman & Barnes Mfg. Co. of Akron, and the Detroit Twist Drill Co. of Detroit, are announced by William H. Eager, president.

Officers, in addition to Mr. Eager, former Whitman & Barnes president, are Muir B. Snow, vice-president, and Karl Kendig, secretary and treasurer. In addition to these, the other directors are A. H. Commins, lawyer, Akron; W. J. O'Neill, vice-president of the Union Trust Co., Cleveland; A. D. Armitage, chairman of the board, J. H. Williams Co., Buffalo; C. H. Hecker, vice-president of the Detroit Lumber Co.; H. H. Sanger, vice-president of the National Bank of Commerce, Detroit, and J. H. Hamblen, Jr., lawyer, Detroit.

Mr. Snow was president of the Detroit Twist Drill Co. Mr. Kendig occupied the posts of secretary and assistant treasurer of Whitman & Barnes.

H. Z. Callender, Whitman & Barnes' sales manager, becomes sales manager of the new company. Ralph Hammersley, former superintendent of Whitman & Barnes, is chief engineer, and J. A. Dietrich, superintendent of Detroit Twist Drill, continues as superintendent of the new organization.

The merger unites two of the oldest and strongest companies in the twist drill and reamer fields into one of the largest producers in the United States, Mr. Eager pointed out, with increased facilities for service and for active participation in foreign markets.

Plants operated by both companies prior to the merger are to be maintained for the present. Gradually, as expanded facilities in Detroit permit, the Akron factory activity and personnel will be moved to Detroit.

Warehouses and branches maintained by Whitman & Barnes in New York and Chicago will be continued, with Frank W. Oliver in charge in the metropolis and M. J. Kearins at the latter city. A new branch at Detroit, comprising that city and the southern Michigan territory, has been created, with A. B. Hall in charge.

To Sell Insurance on Time

BOSTON, Nov. 20.—Casualty companies composing the Massachusetts automobile rating and accident prevention bureau are considering a proposal to establish a partial payment plan for the handling of compulsory automobile and liability insurance premium payments. The matter will come up for consideration at a meeting of the governing committee next week.

WRIGHT TO PROVIDE SERVICE BY PLANE

PATERSON, N. J., Nov. 22—A Fokker plane has been purchased by the Wright Aeronautical Corp., the first of a series which this company will purchase for expediting service on Wright engines in the eastern section of the United States. The plane will be used to deliver parts and carry mechanics to any point east of Chicago where service may be required. There are now several hundred Wright "Whirlwind" engines in commercial service with the prospect that many more will be used in the near future.

"Basic Facts" Ready

1927 Edition Shows Changes in Distribution Factors

PHILADELPHIA, Nov. 23.—The 1927 edition of "Basic Facts on Automotive Distribution," published by the Chilton Class Journal Co., is now available for distribution to the industry.

It gives passenger car and truck registration by states and zones; car registration, Ford and non-Ford, by zones; truck registration, Ford and non-Ford by zones, and analyzes 99,413 retail outlets, 83,758 repair shops and 99,413 tire outlets.

Liberty Motor Price Fixed at $2000 by U. S.

WASHINGTON, Nov. 23.—The government's stock of new Liberty motors, now stationed at the Little Rock Air Intermediate Depot, at Little Rock, Ark., are to be sold for $2000 each, plus a $10 handling charge, the government announces. The only proviso in the sale is that the motors, each of 400 hp., may be used only on airplanes to be flown in the United States. Full details may be secured from the material division, Air Corps, McCook Field, Dayton, Ohio.

Study New Belgian Fuel

WASHINGTON, Nov. 22—A new motor fuel, composed of gasoline, petroleum and a third product which is said to assure combustion of the first two, is being studied by Belgian government engineers and is arousing much interest in that country, says a cable to the Department of Commerce from Brussels. The new fuel, known as the "Procede Laurent," will, its sponsors claim, decrease foreign purchases by Belgium 100,000,000 francs a year.

Opel Uses Juhasz Carburetor

NEW YORK, Nov. 22—The German Opel car is now being fitted with the Juhasz carburetor according to the Juhasz Carburetor Corp. of this city.

G.M.A.C. to Open 4 Foreign Branches

Capital Increase of 60,000 Shares Approved—Business Nears $1,500,000,000

DETROIT, Nov. 22.—The New York State Banking Department has approved an increase in the capital stock of the General Motors Acceptance Corp., of 60,000 shares. This stock will be sold to General Motors Corp. at $125 a share and will provide $7,500,000 of additional capital funds. With the increase the corporation will have capital, surplus and undivided profits aggregating $38,200,000.

The State banking department likewise approved the application of the company to establish branch offices in Santiago, Chile; Hamburg, Germany; Madrid, Spain, and Melbourne, Australia. Application also has been filed for a branch in Jerusalem.

From the time the finance corporation was started early in 1919 to June 30, 1926, a total of 1,301,718 cars, trucks and tractors have been financed under the retail plan, and 740,752 cars, trucks and tractors under the wholesale plan. The figures do not include other General Motors products or the operation of the foreign department. During this period the total financial accommodation extended by the corporation was $1,411,101,164.

A study of the acceptance corporation's business since it was started, reveals that the total volume has shown a steady increase, the greatest growth coming during the present year.

	Foreign	Retail	Wholesale	Total
1919..	$3,256	$9,989	$7,635	$20,880
1920..	19,830	46,693	37,578	104,102
1921..	3,361	39,725	34,370	77,457
1922..	7,593	73,608	54,054	135,256
1923..	22,415	102,049	95,151	218,616
1924..	32,194	102,564	118,889	253,649
1925..	35,313	155,300	90,813	281,426
1926 to June 30	15,250	184,134	120,326	319,711
Ttls.	$138,216	$714,064	$558,820	$1,411,101

Note: 000 omitted.

New Perkins Company to Build Machine Tools

SPRINGFIELD, MASS., Nov. 20—The Perkins Appliance Co., manufacturer of gears and special machines, has been reorganized as the Perkins Machine & Gear Co., with capitalization increased to $500,000 of preferred stock and 15,000 shares of common stock of no par value. This concern is putting on the market a new multi-cut machine for use in automotive and other metal-working industries.

Executives of the Chapman Valve Mfg. Co. have acquired a substantial interest. J. L. Perkins, who was head of the Perkins Appliance Co., is president of the new company but A. W. Gilbert, president of Chapman Valve, becomes chairman of the board of directors of the Perkins company and J. J. Duggan, treasurer for Chapman Valve, also will be treasurer.

Men of the Industry and What They Are Doing

Aeronautical Chamber to Hold Cobham Dinner

Sir Alan Cobham, British ace, who is credited with having flown one million miles, arrived this week on the Homeric to deliver a series of lectures on National and International Aerial Transportation. He will be the guest of honor at a banquet given by the Aeronautical Chamber of Commerce on Nov. 29.

Among Sir Alan's many expeditions were his epochal 17,000 miles flight from London to India and return, and his 16,000 mile hop to South Africa and return, surmounted by a 28,000 mile round trip to Port Darwin, Australia.

More than 500 guests have accepted invitations to attend the Aeronautical Chamber dinner, among them W. P. MacCracken, assistant secretary of commerce in charge of aviation; F. Trubee Davison, assistant secretary of war in charge of aviation; E. P. Warner, assistant secretary of the navy in charge of aviation, Rear Admiral Moffatt, head of the navy bureau of aeronautics, and Mason M. Patrick, chief of the air corps of the United States Army.

Honor Sir William Letts

Sir William Letts, president of the Society of Motor Traders and Manufacturers of Great Britain and managing director of Willys-Overland Crossley, Ltd., London, was the guest of honor at a dinner at the Sphinx Club this week, following his return to New York from Toledo, where he conferred with John N. Willys of Willys-Overland Co.

Nash Sees 1927 Sound

In a statement this week, Charles W. Nash, president of Nash Motors Co., says the outlook for the automotive industry in 1927 is safe and sound. "I believe it to be a fact that the automobile business will be done by fewer manufacturing companies in the future than in the past," Mr. Nash said, "but that automobiles will be made in large number and that they will be made better each year."

Irwin Joins Elcar

Murry Irwin has been appointed manager of the Michigan, Ohio and western Pennsylvania district by Elcar Motor Co. Mr. Irwin has been associated with the automotive and allied industries for a number of years and has also served as a dealer.

Moto Meter Names Hennecke

C. B. Hennecke has been named advertising manager of the Moto Meter Co., Inc., succeeding C. B. Stetson, who resigned recently.

DODGE OFFICER NOW SALT LAKE DEALER

R. J. Fry, until recently assistant secretary and treasurer of Dodge Brothers, Inc., will head a new company which will take over the Dodge Brothers dealership in Salt Lake City. Mr. Fry had been connected with Dodge Brothers since 1911, three years before the company entered upon the manufacture of complete cars.

During the establishment of the original dealer organization for which there were nearly 22,000 applications, Mr. Fry served as credit manager on the committee which selected the first representatives.

Velie Names District Heads

C. T. Ziegler has been appointed district representative for Velie Motors Corp. in the Chicago District. Mr. Ziegler has been connected with the Case Motor Car Division at Racine as district representative for the past two years. Previous to that, he was associated with Nash Motors Co. and the Interstate Motor Co. at Muncie, Ind. M. C. Eppehimer has been appointed representative in the Philadelphia district. Mr. Eppehimer formerly was associated with the White Truck Co.

Barber Zone Sales Head

R. H. Barber, formerly head of R. H. Barber, Inc., Tampa, Fla., distributor, has resigned to become sales executive in North and South Carolina, Georgia and Florida for Chandler. He has 23 years of experience in varied mechanical lines, starting his traveling experience with the International Harvester Co. He is a mechanical and electrical engineer and formerly was Marmon distributor at Tampa before taking the Chandler line.

Airey Sells Slide Rule

Thomas S. Airey, transportation engineer and consultant, has taken over manufacture and sale of the Airey computing slide rule designed for rapid calculation of measurements and formulas arising in automotive practise. Mr. Airey is conducting the business from his home.

Richard Emig

CLEVELAND, Nov. 23—Richard Emig, for the past four years experimental engineer for the Peerless Motor Car Corp., Cleveland, and Mrs. Emig were killed Sunday when their automobile was hit by a train near Elyria, Ohio. Before joining Peerless he was for 16 years experimental engineer for Cadillac Motor Car Co. Burial will be at Detroit.

E. H. Schwab Named Head of Splitdorf Electrical

E. H. Schwab, brother of Charles M. Schwab, has been elected president of the Splitdorf Electrical Co., succeeding M. W. Bartlett, who is retiring from the business. Mr. Schwab has been chairman of the board of directors since 1924, when the Splitdorf interests were joined with the Bethlehem Spark Plug Co. Other officers named at the directors' meeting were R. W. Porter, general sales manager; F. W. Upton and George W. Lang, vice-presidents.

White Names Officers

H. B. Wagner, White Co. salesman at Rochester, has been appointed district manager at that point taking the place of L. E. Booth, resigned. F. W. Beam, shop foreman at Rochester, has been made service superintendent at Utica, replacing C. W. Hewett who has been transferred to Syracuse as service superintendent, taking the place of F. E. Sarver. The latter has been transferred to Albany as service superintendent, replacing I. T. Kehoe, resigned. L. E. Hartnett has been appointed service superintendent of the factory station at San Diego, Cal.

Lively in St. Louis Zone

Roy Lively has been appointed salesmanager of the St. Louis zone for Durant Motors, Inc., and is in charge of merchandising Star and Flint cars. His headquarters are in the Railway Exchange Bldg. He was formerly in the regional sales manager's department at Kansas City. While in Kansas City, Mr. Lively was the regional winner in a country-wide development promotion contest.

Baldwin Joins Republic

C. M. Baldwin, formerly president of the New York Wills Ste. Claire Co., has become manager of the Republic branch covering Brooklyn and Long Island. The Republic truck is entering upon an extensive expansion program, Mr. Baldwin said, which will include the opening of new branch offices in Newark and Boston. Mr. Baldwin is collaborating with C. L. Bowler, eastern zone manager.

G. Frank Lord in South

G. Frank Lord, general sales manager of the Star car division, Durant Motors, Inc., is visiting Star distributors and dealers in Jacksonville and other southern cities this week.

Scarratt Joins Hyatt

A. W. Scarratt has resigned as engineer with the Minneapolis Steel and Machinery Co. to take a position as engineer with the Hyatt Bearings Division of General Motors Corp.

A.A.A. Says Excise Not Tied to Roads

No Authority for Linking Highways With Tax—Payments Exceed Spendings

WASHINGTON, Nov. 23—Will there be any elimination, in part or whole, of the remaining 3 per cent excise taxes on automobiles at the session of Congress convening Dec. 6 and running to March 4? Developments of the past week are:

The President's spokesman, Nov. 20, declared that President Coolidge believed the Federal Government should continue to collect taxes on automobiles. The President, it was said, considered that the annual Federal expenditure of $85,000,000 for good roads justified the Government in expecting that some sort of Federal tax should be paid by automobile users.

This declaration of the President's spokesman drew the fire of the American Automobile Association, representing, it pointed out, 850 clubs and speaking for 20,000,000 automobile users. President Thomas P. Henry declared "there is no authority, constitutional or otherwise, for linking Federal aid with the excise tax." For the sake of argument, however, if the President's spokesman wanted to view it in that light the association cited figures showing that the Federal Government has taken $1,100,865,983 in excise taxes from the motor car owners, and has spent only $500,000,000 in Federal aid in return, leaving a balance of $600,000,000 in the motorists' favor.

The administration, in announcing its opposition to the automobile tax repeal, pointed out that at the present time Federal highway aid annual expenditures were just about equal to the amount of tax collected, and should stand as is. Figures for the first four months of this fiscal year, July-October inclusive, show that a total of $26,931,885 was collected in excise taxes, an average of about $81,000,000 a year, while the Federal aid program for the next three years calls for $75,000,000 a year, plus $10,000,000 for forest roads.

Rep. J. N. Garner (Dem.) of Texas, discussed the Government's tax program on Monday of this week with Secretary Mellon, declaring that he personally, and Democrats generally, would insist on the 3 per cent automotive tax repeal.

Converse Tire & Rubber Formed in Massachusetts

BOSTON, Nov. 23—Converse Tire & Rubber Co. has been formed at Malden under Massachusetts laws by interests associated with the Converse Rubber Shoe Co. to manufacture and sell automobile tires and tubes. The capital of the company is fixed at $1,000,000 non-cumulative 8 per cent preferred stock, $50 par; $37,500 founders stock, $5 par, and $75,000 common stock, $5 par. The preferred stock will be redeemable in whole or in part at $55 a share. The common stock is non-voting, but otherwise has equal powers with the founders stock.

The officers of the new company are Hugh Bullock, president and treasurer, and Francis H. Caskins, clerk. The directors are Mr. Bullock, M. M. Converse, J. K. Converse, W. L. Burgess, A. Heilman, D. Stern and C. Egolf.

Acme and United Merged by Sale

DETROIT, Nov. 23—C. F. Williams, president of the Acme Motor Truck Co. of Cadillac, made known today that his company has purchased the United Motor Products Co. of Grand Rapids, manufacturer of United motor trucks. The purchase includes material on hand and rights to the trade name "United." According to Mr. Williams the United company will continue to manufacture the United line in addition to the Acme truck.

G. R. Wilbur, who was general manager of the United company, will join the Acme organization and will have complete charge of all sales. No change in sales policies in the two lines will be made, it having been decided to continue them separately as heretofore. Export sales will also be handled as before. A number of United employees will move from Grand Rapids to Cadillac to join the Acme organization.

Chicago National Show Also to Exhibit Trucks

NEW YORK, Nov. 23—Through action taken this week by the National Automobile Chamber of Commerce, space will be given at the Chicago show for a truck exhibit similar to that at the New York Show. Exhibitors who have taken space in the truck section to the present time are Chevrolet Motor Co., James Cunningham Son & Co., Dodge Brothers, Inc., Federal Motor Truck Co., General Motors Truck Co., Graham Brothers, Oakland Motor Car Co., Durant Motors, Inc., and Stewart Motor Corp.

Gage Steel Meeting Set

NEW YORK, Nov. 23—A meeting of the gage steel committee has been called by the Department of Commerce for Dec. 6 at the Engineering Societies Building here. The principal items for discussion are Dimensional Changes on Hardening, Artificial Aging and Wear Tests.

Buick Adds New Unit

FLINT, Nov. 23—The Buick Motor Co. has broken ground for a cleaning building to cost $265,000. The building is one of six which will comprise the new $5,000,000 foundry. It will contain 80,000 sq. ft.

Financial Notes

Stromberg Carburetor Co. of America, Inc., declared regular quarterly dividend of $1.50 payable Jan. 3 to stock of record Dec. 10. For the quarter ended Sept. 30, 1926, net profit was $164,768 after expenses and Federal taxes, equivalent to $2.05 a share earned on 80,000 shares of no par stock. This compares with $201,700, or $2.52 a share in preceding quarter and $240,027, or $3 a share in third quarter of 1925. Net profits for first nine months of 1926 totaled $500,974, equal to $6.26 a share, against $625,396, or $7.81 a share in first nine months of 1925.

Gill Mfg. Co. has paid off all bank loans and after liquidation showed cash balance of $30,000. Trade accounts payable have been reduced since August, 1924, from $69,477 to $4710, and notes payable to individuals from $50,027 to $3500. Bank loans in 1924 were $205,000. In addition, in August, 1924, the company had outstanding notes payable to the trade of $33,672; these likewise have been liquidated.

Martin-Parry Corp. for the year ended Aug. 31, 1926, reports net sales of $5,205,349 as against $3,654,023 for the preceding eight months. Profits for the year after all expenses, depreciation, miscellaneous charges and Federal taxes amounted to $517,842 as against $202,140. With the exception of 1923, both the net sales and profits were the largest in history.

Gabriel Snubber Mfg. Co. declared a quarterly dividend of 87½ cents on common A and B, payable Jan. 1 to stock of record Dec. 15. This places the stock on a $3.50 annual basis. In previous quarter a quarterly dividend of 62½ cents and an extra of 62½ cents were declared.

Marlin-Rockwell Corp. has called its preferred stock for redemption as of Dec. 15. Preferred stock may be converted into common on the basis of four shares of common for one of preferred at any time to and including Dec. 5.

Reo Motor Car Co. reports earnings for the fiscal year ended Aug. 31 of $4,257,919. This is equivalent to $2.12 a share on the 2,000,000 shares of par $10 stock. This compares with $5,422,182 or $2.71 a share in the preceding year.

Borg & Beck has declared a quarterly dividend of $1 placing its stock on $4 annual dividend basis against 75 cents in two previous quarters. Dividend is payable Jan. 1 to stock of record Dec. 18.

Hudson Motor Car Co. declared the regular quarterly dividend of 87½ cents, payable Jan. 3 to stock of record Dec. 15.

New Chandler Sedan, $1695

CLEVELAND, Nov. 23—A de luxe metropolitan five-passenger sedan at $1695 at factory has been introduced by Chandler-Cleveland Motors Corp. Finish is combination duotone lacquer of Ardsley green and apple green. Upholstery is gray blue mohair and interior has many appointments. The body of steel is mounted on the big six chassis.

Say French Ratings Are Discriminatory

Importers Charge Government Bureau Permits French Cars Lower Assessment

PARIS, Nov. 12 (*by mail*)—Discrimination against American automobiles in the application of power ratings for taxation purposes is charged by importers against the French government technical department responsible for this assessment. The French horsepower rating is based on a formula covering bore, stroke and engine speed, and in all ordinary cases the Services des Mines, which is the department having to pass on cars before they are put into service, accepts 1500 r.p.m. as the speed of French engines and 1800 r.p.m. for all foreign engines, including American.

It is well known that the average French engine peaks much higher than the average American engine, but State engineers refuse to admit this and there is no appeal against their decisions. Large numbers of French engines deliver their maximum power at 3500 r.p.m. while a certain number peak at 4000. One well-known American maker has an engine of 179 cu. in. which is taxed one horsepower more than a similar type of engine of 289 cu. in., and both are much higher than French engines of equivalent size. One of the leading French makers has increased the piston displacement of his engine from 88 to 94 cu. in., and at the same time announced that engine speed had been increased, but the fiscal horsepower rating has remained as before.

Not only have higher State taxes to be paid by reason of the increased horsepower rating given to American automobiles, but insurance and other charges are increased and in many cases sales are adversely affected.

French Road Repair Fund is Increased One-Third

PARIS, Nov. 16 *(by mail)*—Expenditure on French road maintenance will be increased 130,000,000 francs during 1927, according to a statement just made by Andre Tardieu, minister of public works. This additional amount will be applied to urgent road repairs and to the remaking of 6500 miles of trunk roads between important centers, comprising Paris to Dieppe, Paris to Cherbourg, Paris to Marseilles, etc. During 1926 the French government spent 261,000,000 francs on road maintenance, while the 1927 amount will be 391,000,000 francs.

It is admitted that with increased automobile traffic, rising from 100,000 vehicles in 1913 to 800,000 in 1925, the present expenditure is insufficient. Revenue from automobile taxation has increased with the number of cars; in 1913 it was nearly 9,000,000 francs, while in 1925 it was 314,000,000 francs.

BRITISH SEEK WAY TO DROP FUEL CAN

LONDON, Nov. 10 (by mail)—The fact that economy in the distribution costs of gasoline is secured by the use of self measuring pumps in place of the two-gallon cans so prevalent in England hitherto has been made clear to British motorists by a cooperative announcement issued by the gasoline companies. The price per gallon throughout the country was reduced recently 1½d when delivery is taken from pumps, but by 1d only when supplies are demanded in cans. In the London district, however, the price was reduced by 1½d for both can and pump supplies.

Canada Parts Duty Reduces U. S. Rate

WASHINGTON, Nov. 24—Reduction by Canada of countervailing duties on motor truck parts and accessories imported by Canada from the United States to 20 per cent has resulted in the fixing of United States tariff rates for exports from Canada of similar merchandise at the main rate of 25 per cent instead of 30 per cent as formerly.

The Canadian rate had been about 30 per cent in this classification, but the United States Tariff Act of 1922, which fixed the main rate at 25 per cent, provided that, if another country assessed a higher rate on importations of such commodities from the United States, the United States rate shall be raised until the other country's rate has been equalled. This resulted in a 30 per cent rate being fixed by the United States to equal Canada's. Canada's reduction of the rate to 20 per cent, therefore, has led to instructions from the Treasury Department to all customs officers to change the United States levy to the main rate of 25 per cent.

To Study Tractor Use

WASHINGTON, Nov. 24.—Plans for well organized research in mechanical farm equipment and its uses, particularly the use of the tractor, were made at a meeting here of representatives of the National Association of Farm Equipment Manufacturers and the American Society of Agricultural Engineers at which Secretary of Agriculture Jardine presided.

Flint Axle Brings $23,500

FLINT, Nov. 19.—The circuit court has approved the price of $23,500 for the sale of the machinery, stock and equipment of the Flint Motor Axle Co., and has issued an order that the sale be allowed at that figure. The company went into receivership some months ago. Fred J. Weiss, Harvey E. Schweitzer and Carl W. Bonbright were receivers.

Employee Earnings Higher in October

Total Employment About Same as Last Year Though Lower Than September

WASHINGTON, Nov. 23—Employment in the leading 54 industries of the United States in October, this year, was 0.2 per cent greater than in October, 1925, and payroll totals were 2.5 per cent greater, according to the November industrial survey, just announced by the bureau of labor statistics, Department of Labor. The report is based on figures from 10,323 establishments, employing 3,112,689 workers.

Comparing October employment figures with September, the automobile industry ranks fourth on the list of 54 industries, as showing the greatest decrease of employees. In the order named they are: The carriage industry with a 11.2 per cent decrease; ice cream, 7.7 per cent; brick, 4 per cent, and automobile industry 3.8 per cent.

Employees' earnings in October showed a decided improvement in 42 of the 54 industries. In the automobile industry despite the 3.8 per cent decrease in number of workers there was an increase of 1.2 per cent in payroll totals. Automobile tires with a decrease in employment of 1.9 per cent showed a drop of 4.4 per cent in payroll totals.

The per capita earnings in all industries combined increased 3.4 per cent in October as compared with September. The relation that these figures have to the industrial business as a whole may be approximated in view of the fact that the figures cited represent 46 per cent of the wage earners of the 54 industries included, and 35 per cent of the wage earners in all manufacturing industries in the United States.

Rickenbacker to Present New Car in December

DETROIT, Nov. 22—The action of the Rickenbacker Motor Car Co. in requesting that a temporary receiver be appointed for the company will pave the way for an expansion of Rickenbacker business, and the receivership will be terminated within six months' time, said Charles M. Tichenor, now vice-president and general manager. The board of directors has decided that manufacturing operations should be resumed at once, on a new line of Rickenbacker automobiles which will be introduced Dec. 1. According to Mr. Tichenor the company will produce the new models at the rate of 100 a week for the balance of November, and will build between 400 and 500 cars in December. The November production will be required to provide distributors with demonstrators. Stocks of former models are declared by the company to be negligible, giving dealers an opportunity to take the new cars at once.

Sheet Steel Mills Increase Activity

Early November Operations Lowest of Year But Improvement Now Noted

NEW YORK, Nov. 24—While the usual pre-holiday air of Thanksgiving Day week was in evidence in the iron and steel markets, it was quite apparent that the zero hour in automotive demand has been left behind. More specifications against old sheet contracts are coming out, none very extensive in tonnage, but nevertheless denoting the first signs of a revival of automotive demand, and there is small-lot ordering of cold-rolled strip steel and cold-finished bars.

The first three weeks of November were probably the poorest period of the year for the Mahoning Valley mills, but improvement is noted this week, one of the largest independent sheet rollers now operating two more units than in the preceding week, and four-fifths of the valley sheet-rolling mills being under power. While the feeling is general that the worst is over, no very brisk replenishing of depleted backlogs is looked for.

So far, incentive to anticipate demand is lacking. There is no disposition on the part of either the large or the smaller independents to shade prices, and automotive buyers are not bringing any pressure to bear at this time for what little material they need and are not protected on. Both producers and consumers seem satisfied to let developments in the next few weeks shape the market.

When that time comes, it remains to be seen whether buyers have so much the upper hand of the market that concessions will be necessary to drive out tonnage demand, or whether the indicated volume of demand will be so heavy that consumers, of their own accord, will begin to worry about their supply of steel. Certain it is that any appreciable broadening of motor car production schedules will be more speedily reflected in the tone of the steel market than ever before.

Pig Iron—Blast furnace owners do not look for very much fresh demand for their product during the year's remaining month. The Valley market is on a $19 and the Cleveland market on a $20.50 basis. In 1923, 1924 and 1925 the January market showed gains over the preceding year's final month. The January, 1926, market was a shade firmer than that of December, 1925.

Aluminum—Chief interest in the trade is in the Federal Trade Commission hearings regarding the alleged monopolistic practices of the domestic producer. Evidence so far submitted by automotive aluminum consumers shows conclusively that the world's leading aluminum producer has at all times been solicitous about enjoying the trade and good will of the automotive industry, but it also disclosed the fact, very interesting to the trade, that when the market price of the metal goes beyond a certain point, its use in low-priced motor car mass production is sharply curtailed. It is pointed out that in spite of this, however, aluminum consumption increases from year to year. That the domestic producer offers a better price for borings, turnings and clippings than its customers could obtain in the outside scrap market is in line with best commercial practice and highly commended.

Copper—Domestic demand is a shade better. Market continues easy.

Tin—Sharp fluctuations continue. Spot metal is scarce.

Lead—Storage battery interests have bought liberally. Weakness abroad holds New York market in check.

Industry Curtails Hardwood Buying

ATLANTA, Nov. 20—Lumber wholesalers and manufacturers here state that hardwood sales to the automobile and body trades have been showing a steady decline for the past two or three weeks, but that business as a whole is about as good as last year at this time. Production schedules at the eastern and middle western factories are apparently being heavily curtailed, as the inquiry for the near future needs of the industry is also falling off steadily.

Some sales of thicker dimensions of white ash are being made, but not in any large quantities, and almost invariably for immediate delivery, showing that the industry is not anticipating its requirements more than a few weeks in advance. Plenty of ash is available at the southeastern mills, but in spite of this and the falling off in demand there have been no changes in prices. Some call for best grades of maple and elm is also reported, but not much.

Moto Meter Spark Plug Has Thermostat Control

LONG ISLAND CITY, N. Y., Nov. 23—A new spark plug featured by a thermostatically controlled, automatically variable spark gap, has been brought out by the Moto Meter Co., Inc. The grounded electrode is mounted on the end of a piece of thermostatic metal which is set to give an opening of .015 in. when cold and .030 in. when hot. The smaller gap facilitates starting from cold while the full opening provides the proper condition for normal operation.

Auburn to Build Taxicab

AUBURN, IND., Nov. 23—Auburn Automobile Co. will build a line of taxicabs to be known as the Saf-T-Cab under contract for the Saf-T-Cab Corp. of Cleveland, according to company announcement here. The contract calls for cash payment on delivery.

Spain Would Control American Air Route

Seeks Pact With Latin American Countries Giving Practical Monopoly

NEW YORK, Nov. 23—As the result of a recent Iberian-South American air conference in Madrid the establishment of an air service between Europe and America seems to have been brought within measurable distance. The conference was attended by representatives of the Governments of Spain, Portugal, Argentina, Brazil, Peru, Colombia, Chile, Paraguay, Ecuador, Uruguay, Santo Domingo, Cuba, Mexico, Guatemala, Venezuela and San Salvador.

Spain refused to adhere to the Geneva Air Navigation Conference, and this refusal is now explained by the establishment of the Ibero-American Air Conference. The Spanish Government for more than a year had been in conference with Zeppelin and other German aircraft firms with a view to the establishment of a large aircraft industry in Spain. It appears that what the Spanish Government is after is a practical monopoly on air communications between Europe and Central and South American countries, but the delegates from most of the American countries objected to what they referred to as the ultra-protectionist policy, and details were left to be settled at future conferences.

The arrangements made, however, are said to be such as to enable Spain to proceed with its program, and it is planned to shortly start the manufacture of Zeppelins and large seaplanes in Andalusia. A contract entered into between the Spanish Government and a Spanish-German company has been approved by the State Council. One of the conditions agreed to is that the Spanish Government pay a subsidy of 500,000 pesetas for each transatlantic journey made by either a Zeppelin or seaplane within the next three years.

Training Plane Bids Are Sought by Navy

WASHINGTON, Nov. 23.—The Naval Bureau of Aeronautics has announced an open competition for a standard type of training plane for the Navy, bids from all American aircraft contractors and designers having been invited.

Weights ranging from 15 to 35 per cent will be given in the competition on the basis of four major characteristics—performance, arrangement, maintenance and contractual. Specifications require that the planes be convertible for land or sea flying. All bids are to be filed with the bureau of accounts and supplies of the Navy, in Washington, by midnight Dec. 21, 1926.

Grant Sees South Recovering Quickly

CHARLOTTE, N. C., Nov. 22—The money income of the South from the crops harvested this fall will be brought up to the average, despite the collapse of the price of cotton, because of the greater diversification in agriculture, declared R. H. Grant, vice-president and general sales manager of Chevrolet Motor Co., who addressed a dealers' conference here. Mr. Grant is studying trade conditions in the Southeast.

More optimism and work on the part of all interests was the treatment prescribed by him for the relief of the so-called depression in the South, which is attributed to the price of cotton. Those who display the greatest energy in the course of the next few months will reap the largest harvest, he said. "There is a strong under-current of optimism in the South and early next year this section should begin to enjoy a period of brisk business. Our company is preparing to fill a large demand and other businesses, automotive and otherwise, likewise expect a busy late winter and spring," said Mr. Grant.

Packard Offers Color Choice

DETROIT, Nov. 22—A variety of color combinations now are offered on Packard six models in place of the former regular production colors. The eight-cylinder models introduced three years ago have always been offered in any color combination purchasers might select and the announcement of optional colors on the six-cylinder series marks all Packard cars as now being offered in color options.

Gabriel Has New Snubber

CLEVELAND, Nov. 22—Gabriel Snubber Mfg. Co. has perfected a new snubber for balloon tires and the more flexible springs now characteristic of passenger automobiles. It is claimed for the new snubber that it is a positive mechanical means of preventing preloading of springs.

Gabriel also announced that its snubbers have been made standard equipment on three leading cars and that within the past six months the number of distributors has been doubled. The company now has more than 3000 service stations.

Calliope Calls Attention to Ford Color Options

ST. LOUIS, Nov. 22.—New color options available on Ford cars were displayed by parades of Ford dealers under the guidance of a grand marshal provided by the Ford factory branch here. St. Louis, East St. Louis., Ill., Webster and Clayton were covered. Each parade required a full day.

Each dealer was limited to one car. A Ford truck with a red and gold panel body finished in circus fashion and carrying a calliope followed the official car in which the grand marshal rode.

The entry of each dealer differed from that of every other dealer, showing 25 options in bodies, colors, wheels and appointments in Ford products. These form only a part of the possible options.

Rubber Supply Ample

NEW YORK, Nov. 22—Crude rubber imports for November are considerably in excess of the average of consumption for the first 10 months of the current year, according to estimates prepared by F. R. Henderson of Henderson, Helm & Co., president of the Rubber Exchange of New York. This, coupled with the fact that consumption of reclaimed rubber is now more than 50 per cent of the amount of crude being consumed, indicates that American manufacturers will have an ample supply for their requirements for several weeks, he said.

Body Work Feature of Salon Exhibit

NEW YORK, Nov. 25.—Six European cars will be shown at the annual salon in the Hotel Commodore which will be held all next week. The car exhibit will be rounded out by 10 American makes displayed with special bodies by custom body builders, 15 body builders in all exhibiting. The foreign cars include Isotta Fraschini, Hispano Suiza, Mercedes, Minerva, Panhard and Renault. American cars shown are Cunningham, Cadillac, Duesenberg, Franklin, Chrysler, Lincoln, Marmon, Packard, Pierce-Arrow and Stutz.

The coachwork exhibits will be by Brewster, Brunn, deCausse, Derham, Dietrich, Fisher, Fleetwood, Holbrook, Hume, Judkins, LeBaron, Locke, Rollston, Weymann and Willoughby. Special exhibits of accessories and equipment will be by C. I. Barrows, James Martin, Specialty Mfg. Co., Triplex Safety Glass Co., W. C. Reynolds and W. Wiese & Co.

$5,000,000 Increase Goal of Mason Tire & Rubber

CLEVELAND, Nov. 20—An increase in gross sales of $5,000,000 was the goal set for salesmen of the Mason Tire & Rubber Co., by W. A. Cluff, president, at the four-day convention in the Hollenden Hotel here this week. He said the neighborhood tire shop was going to do the business during the coming year and that Mason salesmen must pay more attention to these stores.

Among the speakers were C. H. Williams, vice-president in charge of central division sales; Catlin Wolford, San Francisco sales manager; C. B. Peschmann, New York sales manager; W. R. Hopkins, Cleveland manager; D. D. Kimmel, president of the Midland Bank of Cleveland, and H. I. Shepherd, of the Guardian Trust Co., Cleveland.

Developments of the Week in Leading Motor Stocks

NEW YORK, Nov. 25—Motor shares were rather more active last week and at times gave symptoms of a revival of market interest in their fluctuations, but the absence of any definite trend was evidence of the professional character of the operations.

With General Motors, frequently the bell-wether of the automobile stocks, displaying weakness there was little opportunity for forward movements in other shares. Motors was down to around 137, selling ex the regular and special dividends amounting to $5.75 a share. The net decline was over three points.

Others moved fractionally, weakness being shown in Paige-Detroit which touched a new low for the year at 9, and in Hudson, which, however, stayed several points above the point reached a week or two ago. Several gained or lost less than a point, on a comparatively small turnover. The absence of public participation is strikingly revealed by the action of the automobile securities.

On the other hand, in the truck group, there were signs that the professionals had over-reached themselves. Mack Trucks, after sinking steadily for some time under the attack of the bears, executed a right about and the rush to cover brought a quick upward movement. White gained moderately.

A somewhat similar situation developed with the accessory and equipment shares, Gabriel Snubber and Stewart-Warner being pronounced centers of strength after periods of decline. The reaction in Stewart was rapid enough to cause the shorts some difficulties. Other movements were mainly within a narrow range and the tire stocks, after the announcement of another cut in prices, were naturally heavy, though the outlook for the companies, which have absorbed inventory losses and are facing a period of stable or gradually rising prices of crude, is excellent.

Rumors of combinations of motor car manufacturers were heard with more than the usual frequency, though the market has developed an unwillingness to lend a sympathetic ear to the reports, grown familiar through repetition.

Industry Holds Employment High

Highway Operations Take Up Slack in Some Centers Show Labor Reports

WASHINGTON, Nov. 22—Despite a seasonal curtailment of production in the automobile industry, the decrease in employment during October was slight, according to reports received by the U. S. Department of Labor. Highway construction was at peak, the reports show, keeping practically all unskilled labor employed, except in the more congested cities. Reports from the automobile manufacturing centers, are as follows:

Detroit—Surplus of common labor and machine hands, most noticeable in automobile factories. A large motor company at Highland Park is operating on a five-day a week schedule, with about two-thirds of its usual number of men employed.

Flint—Some units in automobile factories and accessory plants are operating overtime. A large automobile foundry to cost $5,000,000 is under way and when completed will employ 1700 men.

Akron—Rubber factories are operating on full-time schedules. Two large tire companies announced this month their plans for building improvements to their plants, which will cost approximately $1,250,000.

New Jersey—Automobile and accessory plants are undergoing seasonal recession. Some departments of the tire plants in Trenton curtailed their working forces in October.

Syracuse—Seasonal conditions have affected the automotive industry and gear factories have released 300 workers.

Pennsylvania—Production and employment in the automobile industry is approaching a seasonal curtailment. The tire industry employed additional skilled workers during October.

School Safety Work Grows

NEW YORK, Nov. 22—The current report of the Street Traffic Committee of the National Automobile Chamber of Commerce shows 16 states now have state-wide safety instruction and that in eight others partial instruction is given. Through the activity of the school it is hoped in the remaining months of the year to reduce the number of accidents occurring in the same months of 1925 and hold the total for the year less than in 1925. There was a 3 per cent increase in the first nine months.

Takes Guaranteed Parts Name

NEW YORK, Nov. 22—Guaranteed Magneto Parts Co. has changed its name to Guaranteed Parts Co. and is now selling exclusively through jobbers. In addition to its magneto and ignition replacement parts line, the company is now handling battery cables and other products. The selling force has been expanded and strengthened under direction of I. W. Godfrey, general sales manager.

BONUS ON COTTON TO AID CAR SALES

ATLANTA, Nov. 20—Beaudry Motor Co., of Atlanta, Ford dealer, has made arrangements for permitting Georgia farmers to obtain two cents per pound above the market price for their cotton by using the cotton in the purchase of a Ford car from this company. If a farmer trades in one bale of cotton weighing 500 lb. on a new or used Ford car to this company, and the average market price on the day the sale is made is 11 cents per pound, he will receive $65 for the bale instead of $55, the amount being applied on the car purchase. It is the plan of the company to assist in removing as much cotton as possible from the market which will ultimately have the effect of increasing the price, so that the company at least will lose nothing on the transaction.

Bids for Postal Bodies Range From $149 to $540

WASHINGTON, Nov. 20—Bids for the U. S. Postal Service's supply of automobile bodies for 1927, opened this week, reveal a wide range of prices, the lowest being $149.40, and the highest $540. The bidders follow:

Ford Body Co., Greensboro, N. C., $312 each; George H. Holzbog, Jeffersonville, Ind., $149.40; General Body Co., Defiance, O., $219.96; Fred Roeder Mfg. Co., Brooklyn, $540; Fort Smith Body Co., Fort Smith, Ark., $264; American Coach & Body Co., Cleveland, $269; Indiana Truck Corp., Marion, O, $434; Hoover Body Co., York, Pa., $305; Ahlbrand Carriage Co., Seymour, Ind., $251.31; Boyertown Auto Body Works, Inc., Boyertown, Pa., $324.85; Defiance Carriage & Body Co., Defiance, O., $237.50; Mason Mfg. Co., Inc., Newport News, Va., $277; Andrew Murphy & Son, Inc., Omaha, $323.50; J. W. Rogers Mfg. Co., Minneapolis, $325; Kentucky Wagon Mfg. Co., Louisville, $219.85; Kratzer Carriage Co., Des Moines, $341.46; Hackney Bros., Inc., Wilson, N. C., $248.90; Weatherproof Body Corp., Corunna, Mich., $225; Anheuser-Busch, Inc., St. Louis, $370; American Body Co., Dallas, $428; and A. P. Rainey & Son, Westminster, Md., $251.80.

Visit A. O. Smith Plant

MILWAUKEE, Nov. 22—Fifty members of the Engineers' Society of Milwaukee made a tour of inspection of the recently enlarged plant of the A. O. Smith Corp. this week as the guests of the company. The principal point of interest was the automatic automobile frame production plant.

To Sell Battery Equipment

ROCHESTER, Nov. 22—Rochester Electric Products Co. has assigned the sale of its diverter pole generator, battery charging equipment for the automotive trade to General Equipment Corp. of Kalamazoo.

Cleveland Moves to Boost Products

City's Business Men Join Automotive Leaders in Plans for Demonstration

CLEVELAND, Nov. 20.—The Cleveland Chamber of Commerce and the Cleveland Automobile Manufacturers and Dealers Association will cooperate in a demonstration intended to impress the world with the importance of the city in the automotive industry. The program will culminate with a luncheon meeting at the Public Auditorium. So far 2000 business men of the city have agreed to attend. Edward S. Jordan and several national speakers identified with the automotive industry will be on the program.

Instead of taking time from the meeting to view exhibits, the exhibits will be brought to the auditorium in the form of a parade which will be participated in by Peerless, Stearns, Jordan and Chandler passenger automobiles and White trucks and motor buses. Each will carry banners and charts setting forth the importance of Cleveland in the automotive industry.

The meeting which will feature passenger automobiles and parts, aeronautics, motor trucks and buses, will be the second in a series of four industrial meetings leading up to an industrial exposition to be held in Cleveland next August.

The Cleveland Chamber of Commerce now has a staff of statisticians in Washington gathering facts about industrial Cleveland. The results will be announced at the meeting.

R. C. Norberg, of the Willard Storage Battery, is chairman of a special sub-committee on arrangements, and Herbert Buckman, manager of the Cleveland Automobile Manufacturers and Dealers Association, is chairman of the committee in charge of exhibits.

Addresses at the meeting will be broadcast over WTAM, Willard Storage Battery radio station.

Milwaukee Branch Opens

MILWAUKEE, Nov. 20—The new Milwaukee branch of Mack International Motor Truck Corp., costing $350,000 and providing more than 50,000 sq. ft., was formally opened this week. The service department is on a 24-hour schedule, enabling Mack owners to have trucks conditioned at night and lose no time from daylight hauling schedules. All machines are driven by individual electric motors and there is a monorail crane system throughout. Live steam is used for cleaning parts. The comfort of workmen is met to an unusual degree, shower baths being one of the many conveniences. Rodney Hallam is manager of the Milwaukee branch.

Registrations Gain 23.4% in Germany

BERLIN, Nov. 15 (*by mail*)—According to the automobile census taken July 1, this year. Germany had 544,894 motor vehicles, including motorcycles over a certain piston displacement, on which an annual tax is levied, aside from 26,934 small tax-free motorcycles. The total number represents an increase of 23.4 per cent over the figure of the previous year. Of the total 236,387 were motorcycles; 20,392 public cabs and omnibuses; 4208 motor vehicles in the service of the government, municipalities, etc., 181,856 private passenger cars; 33,208 motor trucks up to 4400 lb. weight; 6082 motor trucks weighing more than 4400 lb. weight in the service of the governments, municipalties, etc., 2430 in agricultural and forestry service; 6208 in transport undertakings; 42,091 in commercial and industrial undertakings; 10,263 road tractors, 1769 street sprinklers, fire engines, etc. The greatest increase over last year was in motorcycles, 46.5 per cent, while private passenger cars increased 15¾ per cent.

Japan Plans Air Routes

WASHINGTON, Nov. 22—The Japanese Ministry of Communications plans to ask in the forthcoming budget for 11,200,000 yen, or approximately $5,000,000 for developing air routes and subsidizing air transport concerns, a cable to the Department of Commerce from C. E. Herring, American commercial attache at Tokyo, states. At least two new air routes are to be established by 1932 under the plans.

Harvester Adds Equipment

SPRINGFIELD, OHIO, Nov. 22—Large shipments of light, high-speed trucks and motor buses are being made by the Springfield works of The International Harvester Co. The outlook, it is stated, is considered favorable for business. Additional equipment is being installed to meet increasing demands.

Coming Feature Issues of Chilton Class Journal Publications

Dec. 10—Operation and Maintenance—Service Station Equipment Issue.

Dec. 15—Commercial Car Journal—Good Roads Issue.

Jan. 1—Automobile Trade Journal—Annual Show Issue.

Jan. 6—Motor Age—Annual Show Issue.

Jan. 15—Commercial Car Journal—New York Show Issue.

Jan. 27.—Motor Age—Chicago Show Issue.

Steam Car Development British Association Aim

LONDON, Nov. 15 (*by mail*)—The British Steam Car Association has been formed with a view to developing the use of steam wagons in the United Kingdom. Technical and executive committees have been formed. The latter will draw up a formal constitution, rules and regulations, and these will be submitted for approval to a general meeting to be held toward the end of the month.

Air Cleaners S.A.E. Topic

SAN FRANCISCO, Nov. 22—The Northern California Section of the Society of Automotive Engineers held its monthly meeting and banquet at the Engineers' Club. Prof. A. H. Hoffman of the division of agricultural engineering of the University of California, had charge of the program, with the cooperation of W. S. Crowell, secretary of the section. Professor Hoffman presented a paper on air cleaners.

The section has elected Edwin C. Wood, chairman, William Penfield and Ed Maybem, vice-chairmen, and Gus Wade, treasurer. Mr. Crowell was re-elected secretary.

Race Board Drops Displacement Limit

PARIS, Nov. 15 (*by mail*)—The International Association of Recognized Automobile Clubs meeting in Paris has voted to eliminate the class of touring cars in international racing. No change was made in the international weight limit for racing cars. On the motion of the German delegation the minimum weight limit for sport type vehicles was fixed at 10 per cent above that for racing cars. A committee was appointed to draw up regulations for contests for sport-type vehicles. At the end of 1927 the displacement limit of 91½ cu. in. will be dropped and the "free formula" will be reintroduced, that is, there will be no official limit on piston displacement of cars taking part in international races.

Dates for some of the leading races of the coming season were set as follows:

Indianapolis, May 31; Grand Prize of France, July 3; Grand Prize of Great Britain, Aug. 1; Grand Prize of Europe, Sept. 4; Grand Prize of Spain, Sept. 25. The Grand Prize of Italy will next year be combined with the Grand Prize of Europe and be run off at Monza.

Stutz Dealers to Meet

INDIANAPOLIS, Nov. 22—Arrangements have been completed for the annual sales and service convention of Stutz Motor Car Co. of America, Inc., which will be held at the factory here, Dec. 13 to 15. Distributors and dealers, with many members of their organizations, will attend from all parts of the country. F. E. Moskovics, president, and E. S. Gorrell, vice-president, will be in active charge of convention activities. Charles M. Schwab, E. V. R. Thayer and C. J. Schmidlapp, directors, will be in attendance.

New Departure Takes Stock

NEW YORK, Nov. 22—The New Departure plant at Bristol, Conn., employing 5000 hands, is closed all this week for inventory. Usually the shutdown is of three days' duration.

Calendar of Coming Events

SHOWS

Brussels .....Dec. 4-15
Buenos Aires .....Dec. 7-20
Ninth Argentine Automobile Show, Palermo Park.
Cairo .....Feb. 15-March 15
First International Motor Show.
Chicago .....Jan. 10-15
Coliseum, American Road Builders' Association.
Chicago .....Jan. 29-Feb. 5
National, Coliseum, National Automobile Chamber of Commerce.
Chicago .....Jan. 29-Feb. 5
Annual Salon, Hotel Drake.
Colombo .....Jan. 6-16
All-Ceylon Motor and General Engineering Exhibition.
Los Angeles .....Feb. 12-19
Annual Salon, Hotel Biltmore.
New York .....Nov. 28-Dec. 4
Annual Salon, Hotel Commodore.
New York .....Jan. 8-15
National, Grand Central Palace, National Automobile Chamber of Commerce.
Paris .....Dec. 3-19
International Aeronautic Exposition, Grand Palais.
Ponce, Porto Rico .....Dec. 1-12

CONVENTIONS

American Road Builders' Association, Congress Hotel, Chicago....Jan. 10-15
Automotive Electric Association, Electrical Service Meeting, Congress Hotel, Chicago .....Feb. 1-2
Automotive Manufacturers Association, Annual Meeting, Chicago.....Dec. 3
Motor & Accessory Manufacturers Association, Dinner, New York .Jan. 12
National Automobile Dealers Association, Hotel Commodore, New York .....Jan. 10-11
National Automobile Dealers Association, La Salle Hotel, Chicago..Feb. 1-3
National Research Council, Washington, D. C. .....Dec. 2-3
Rubber Association of America, meeting and dinner, Hotel Commodore, New York .....Jan. 10

N. A. C. C.

Chicago, Feb. 1—Service Meeting.
New York, Jan. 10-11—Third World Motor Transport Congress.
New York, Jan. 11—Service Meeting.
New York, Jan. 11—Banquet.

S. A. E.

Chicago, Dec. 1-3—Tractor Meeting.
Detroit, Jan. 25-28—Annual Meeting.
Detroit, Jan. 28—Carnival.
New York, Jan. 13—Banquet.

RACES

Altoona, Pa. .....June 11
Atlantic City .....April 30
Charlotte, N. C. .....May 9
Fresno, Cal. .....April 21
Indianapolis .....May 30
Los Angeles .....Dec. 12
Los Angeles .....Feb. 22
Los Angeles .....April 10
Salem, N. H. .....June 25